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ORIGINAL ARTICLES.

A FURTHER REPORT ON THE TREATMENT OF TUBERCULOSIS BY IODOFORM INUNCTIONS.

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BY LAWRENCE F. FLICK, M.D.

PHILADELPHIA, PA.

Preliminary to making this report it may be proper for me to say that for some years I have been substituting in the majority of my cases europhen for iodoform because of its less offensive odor. I have long since satisfied my mind that the benefit derived from iodoform is due to the nascent iodin given off from the decomposition of iodoform which takes place, either in the tissues of the body or in the blood. Finding iodoform very offensive and having been informed that europhen is even more rich in iodin than is iodoform, I was induced to take up europhen as a substitute, and have found it equally useful, if not more useful in the treatment of tuberculosis.

On Nov. 12, 1890, in a paper on "The Treatment of Tuberculosis," before the Philadelphia County Medical Society, I first mentioned the use of iodoform by inunction. In that paper I quoted no cases, but simply stated that I had obtained good results. On April 22, 1891, I reported ten cases to the same society and exhibited a number of them. I then sumed up my report of the cases as: one, apparently well; three approaching a cure with fair prospects of entire recovery; four having the disease arrested and being in a comfortable condition; and two having had a relapse and doing badly.

On March 12, 1892, I made a further report on those cases in the *Medical News* and quoted five additional cases. By that time, of my first ten cases, four had died, three were apparently well, one was enjoying comparatively good health, and two had disappeared from observation. Of the five new cases, two were apparently well, one promised to recover, and two showed evidence of improvement.

It is now nearly eight years since I began this method of treatment; about six years since I reported my first cases and a little over five years since I made my last report. A further report on the fifteen cases quoted in my former papers will give a true picture of the ultimate results in the treatment of tuberculosis by any and all methods, and will offer a severe test of the value of the method of treatment with which I am dealing. In addition to those cases I deem it proper, however, to give an account of my results with the method of treatment since then, and I will therefore give brief statements of some new cases treated, with a summary of the results obtained in all cases treated of which I have memoranda.

Of the first ten cases reported, eight are now dead, one is apparently well and one has disappeared from under observation. Of the eight cases that have died, seven without doubt died of tuberculosis and one, after years of health, died of some acute abdominal trouble which developed during the lying-in period and which may have been tubercular. Thus it will be seen that ten cases which two years after the beginning of treatment gave the basis of a favorable report, after eight years, make a very gloomy showing. Expressed in percentages, the best that can be claimed, is 10 per cent. recovery, or if the case which died of intercurrent disease is counted as cured, 20 per cent. recovery with 80 or 90 per cent. mortality. It must be stated, however, that some of the cases that died gave up treatment probably earlier than they should have done and that the result might have been different in some if the treatment had been continued for a longer period. Of the five additional cases reported in 1892, two are dead, one is well, and two have passed from observation. Of the last two one is probably dead and one is probably well. This set of cases will show again almost the same result as the first ten.

Summing up the result of the fifteen cases, I can state positively that ten are dead, two are well, and three have passed from observation. Of these three, two are probably dead and one is probably well. The best that can therefore be claimed for the fifteen cases after a period ranging from five to eight years is about 20 per cent. recovery.

It will be of some interest to give a few details about these cases and I will therefore very briefly refer to them in numbers and state the course and termination of each case.

Case 1.—This case, which was especially interesting because of a local tuberculosis in the eyelid, in addition to the deposit in the lung, had recovered entirely, both of the local trouble in the eye and of the deposit in the lung. After recovery she had an acute attack of insanity, for which she was sent to an asylum for a brief period, but from which she entirely recovered. Subsequently she got married and had three or four children, remaining perfectly well during all of this time. Shortly before the termination of her last pregnancy she tripped and fell, bringing on labor somewhat prematurely. During her lying-in-period she developed abdominal trouble, which, judging from the data given me by a member of her family, may have been tubercular, and from which she died.

Case 2.—A school boy who had had the disease in a very acute form, was apparently entirely well at the end of six months. He remained well for a considerable period. He seriously objected to the annoyance of inunctions and refused to continue the treatment, although I urged it, because he was much exposed to reinfection by reason of other cases in his family. At the end of about a year he again developed an acute attack which ran a very rapid course and proved fatal.

Case 3.—A sister of Case 2 was far advanced in the disease when the treatment was begun, but showed, probably better than any other case, what can be accomplished under adverse circumstances by persistent and uninterrupted treatment. Her environments were the worst possible and her duties were of a character most depressing and wearing. All her family had either died of tuberculosis or were dying of it, except one decrepit brother who had had spinal disease and was entirely crippled. Living in a small badly ventilated house in one of

the blind alleys of our city, with poverty ever abiding in her household, she was compelled during her entire illness, covering a period of about five years, to do all the work for her family, which always included one or two invalids, and besides she had the anxiety of mind which must often come with an empty larder. In spite of all her difficulties she used the inunctions daily and so pinned her faith to them that she declined to use any other treatment. Although her disease was always of a rather acute nature, she frequently having a high temperature while at the wash tub, she continued at her duties until the last, and lived about five years from the beginning of her disease. This is the more remarkable as almost every part of her body was affected with the disease, she even having large spots of lupus on her hands and fingers.

Case 4, 6, 7, 8, were reported dead in my last report and therefore need not be further spoken of here.

Case 5 gave up the treatment after having improved very much, but not having regained his health entirely, sought relief elsewhere and subsequently died of the disease.

Case 9 continues in good health up to the present time. The disease was entirely incipient with her and being so it is but fair to say that the diagnosis was somewhat in doubt. Clinically, however, she had all the symptoms of tuberculosis, so that it is proper to count her case in summing up the results of treatment.

Case 10, disappeared from observation, but I am inclined to think has since died.

Case 11 recovered so entirely after the first attack that I began to doubt my diagnosis. Within a year however, he had a recurrence for which he again came to me for treatment and from which he again apparently recovered. I then urged him to keep up his treatment indefinitely, but he only did so until he felt quite well. He subsequntly had tubercular fistula when he again took up the treatment for a short period with good results and apparent recovery. About a year ago he developed the disease in acute form for which he sought some other method of treatment and from which he never recovered.

Case 12 is at present entirely well. Her symptoms were somewhat acute in the beginning and the case looked unfavorable owing to the fact that she had involvement of the lymphatic glands in addition to the lung trouble. She has, however, not only recovered from her lung trouble but the glands have gown down to the normal condition.

Case 13 was of an acute character and when last heard from had a relapse while in the South where he had gone with a view of benefiting himself. In all probability he has since died.

Case 14 was improving under my treatment when I last saw her, but for a second time discontinued the treatment believing, in all probability, that she was well enough to get along.

Case 15 was entirely well when I last saw her some years ago. As she had been coming to me off and on when she had any fear of recurrence, I have reason to believe that is now well.

Of new cases that I have treated and that have shown some evidence of permanent improvement or cure I will now quote a few.

Case 16.—Male, aged about 28 years, white, was admitted to the Rush Hospital for consumptives May 17, 1892. At time of admission he had consolidation of upper lobe of one lung; had an annoying cough; some slight elevation of temperature; and gave a history of having lost about 40 pounds in weight. He was given a tonic, placed on iodoform inunctions and given nutritious food and a large quantity of milk daily. Under this treatment the lung cleared up and the cough disappeared, and he rapidly gained in weight so that at the end of three months he was discharged well and with a gain of 25.5 pounds. I have made inquiry about this case since and have had knowledge of him within a year, at which time he continued to be well.

Case 17.—Male, white, aged about 25 years, was admitted to the Rush Hospital for Consumptives early in 1892. He had been exposed to tuberculosis in his own family at home for a considerable period and was apparently laboring under an acute attack. He was thin, pale and delicate looking, and seemed to be a most unpromising case for treatment. The deposits in his lungs were not localized, but were apparently scattered in small patches over both lungs. He had had hemorrhages and his cough was almost constant. There were bacilli in the sputa. He was placed on tonic treatment with good food and plenty of milk and given inunctions of iodoform solution daily. For a long time there was no improvement in his case. He had most severe hemorrhages during his stay in the hospital, during one of which he was almost completely exsanguinated and was watched for death for several days. After about three months, however, he began to improve and at the end of six months was discharged with the disease apparently arrested. I have seen him repeatedly since his discharge and quite recently, and he has remained well, although he has subjected himself to the severest tests, such as exposure to hardships and to such conditions as are usually looked upon as conducive to tuberculosis. He has moreover been exposed to contagion in his own home since then, as his father has developed tuberculosis, and he is in constant association with him.

Case 18.—Female, white, aged about 50 years, married, mother of a large number of children, came under treatment in the early part of 1891. She then gave a history of having had a cough for a long time which had been worse at certain intervals. When I first saw her she stated that she coughed a great deal at times; that she spat a large amount of green sputa; that she was pale at intervals; that she had a very poor appetite; and that she believed all these symptoms to be due to an attack of "grip" which she had had a year previous. The physical signs showed the presence of small deposits scattered all over the lungs, probably along the bronchial tubes, but no large deposit in any one place. An examination of sputa showed the presence of a very large number of tubercle bacilli. She had considerable variation of temperature and considered herself quite ill. I placed her on inunctions of iodoform in cod liver oil, gave her creosote internally and gave her phenacetin and quinin for her fever. She improved very slowly under this treatment, but yet the improvement was perceptible from month to month. In the early summer she was able to go to the seashore, where she continued to improve, and when she returned to the city her pulse was normal, her temperature normal; she had a fair appetite, had gained some in weight, not a great deal; coughed very little and spat scarcely any. Although not well, she believed herself to be in good condition. After that she enjoyed fair health, but had recurrences of exacerbations of cough, and I believe that she is still enjoying fair health, although I have not seen her recently.

Case 19.—Female, white, aged 70, mother of large family, came under treatment for a cough in September, 1892. She had had in recent years several sons die of tuberculosis and she had just nursed one during a long confinement to his room, where she had been his constant associate. Her cough came on shortly after her son's death, and upon physical examination it was found that she had almost complete consolidation of the apex of one lung extending below the angle of the scapula. I gave her tonic treatment and placed her on inunctions of iodoform. In order that she might have the benefit of climate in addition to what could be gained from therapeutics, she went to Florida in the fall and spent the winter there, during which time she continued the inunctions. When she returned to Philadelphia during the following April the condition of her lungs was very much improved. She continued treatment and spent the hot months of the following summer in the Pocono Mountains. At the end of a year's treatment her lung had apparently entirely recovered and all symptoms of the disease had disappeared. She has remained entirely free from tubercular symptoms since, although she has recently died from disease which may possibly have been tubercular. It is worth stating that this person was a most pronounced subject of gout and had been so from early life, and that the gouty diathesis may have played some part in her recovery.

Case 20.—Female, white, aged about 25 years, teacher, was taken sick with a hemorrhage during the summer of 1892. She had had a brother die of tuberculosis shortly before that time. She had consolidation of the upper lobe of one lung, from which no doubt the hemorrhage came, and had quite a severe cough. At the same time she had a pelvic trouble which looked as though it might be tubercular. I put her to bed and placed her on iodoform inunctions and gave her creosote internally. She improved rapidly and went away to the country for a short time in the latter part of the summer, while she continued her treatment. In the fall she resumed her duties as a teacher and continued the inunctions. The lung cleared up entirely and the pelvic symptoms disappeared after about six months' treatment. About a year subsequently she had a second mild attack, from which she also recovered and she has since remained well and is at present following her vocation as a teacher.

Case 21.—Female, white, aged 23 years, employed at bookbinding, first developed a cough in the early part of 1892. She had been exposed to tuberculosis in her home by reason of her father and sisters suffering from the disease for several years. Physical examination revealed consolidation of the upper lobe of the left lung and she had the tubercular variations of temperature. I placed her on iodoform inunctions with tonics and treatment for temperature. She improved rapidly and recovered so far that scarcely any physical signs of lung disease could be detected upon the most careful examination. She

returned to her work, believing herself well, and declined to have further treatment. She remained well until the spring of 1894, a period of two years, when she again developed a cough, and upon physical examination I found consolidation of the base of the left lung. She again had temperature variations, and this time some expectoration in which tubercle bacilli were found. The treatment with iodoform was resumed and she was kept under observation continuously, but in spite of everything that could be done the case took on an acute form and in the course of three or four months came to a fatal issue.

Case 22.—Female, white, aged 25 years, teacher, first developed tuberculosis about 1892, and came under treatment in September of that year. She had been exposed to the disease by helping nurse her father. When I first saw her she had consolidation of the apex of one lung with a very annoying cough, some variation of temperature, loss of appetite and accompanying loss of flesh. She received tonic treatment and iodoform inunctions with creosote by the mouth. The deposit broke down and a cavity formed. At this time the larynx became slightly involved, for which she received special treatment by Dr. Harrison Allen. She continued her inunctions at intervals, ceasing them when she believed herself better. When last seen, which was quite recently, she was enjoying good health, but still had a cough, a secreting cavity and some bacilli present in the sputa. Otherwise, however, she is apparently enjoying good health and I believe that, could she be induced to use her treatment regularly and persistently, she would recover entirely.

Case 23.—Female, white, married, aged 44 years, developed a cough September, 1892, which, although not alarming, aroused the suspicions of her brother, who was a physician, because it was accompanied with symptoms of lassitude and some loss of flesh. As the cough persisted, repeated careful examinations were made of the lung and it was finally discovered that there was an area of dulness along the spine between the spinal ridge and the shoulder blade, high up on the right side, indicating an enlarged bronchial gland. After a while this gland broke down, and the discharged pus revealed the presence of many tubercle bacilli. The case was placed on iodoform inunctions and large doses of creosote, with such tonic treatment as would suggest itself from time to time. Although the case was a most unpromising one, under the attention and close watching of her brother, who forced her nutrition in the most judicious manner, she improved, and the abscess which formed in the bronchial gland apparently healed up without any new deposit having formed anywhere in the lungs. The treatment was persevered in for about eight months, when a change of climate was determined upon. The case continued to do well and the patient has since traveled in Europe, apparently in good health. Occasionally symptoms occur which give some ground for solicitude, but to all appearances she is well.

Case 24.—Female, white, aged about 18 years, was taken with a slight hemorrhage in the fall of 1892. Physical examination revealed very little abnormal in the lungs, and the health of the patient was not much affected. Shortly thereafter, however, more active symptoms set in, and it was clear that there was a deposit in the apex of one lung. The young lady had during the year taken a trip on a sailing vessel with a consumptive friend, and was on most intimate terms with her. Under iodoform inunctions and tonic treatment, and with forced nutrition, she improved very rapidly, and during the summer of 1893, almost entirely recovered her health in the Pocono region. During all this time she faithfully used the inunctions of europhen. Early in 1894 she went South with a view of escaping the severity of the northern winter, and while there had a severe hemorrhage which was followed by most acute symptoms which necessitated her being brought home. She died of acute tuberculosis shortly after her return.

Case 25.—Female, white, aged 18 years, the only child of a wealthy man. Mother and only brother had died of tuberculosis some years before. She had had a slight attack of influenza, during the convalescent stage of which her father took her to Florida, from whence she returned after some time with a persistent cough and some indisposition, accompanied with daily rise of temperature. A throat specialist was consulted, who for a while treated her for laryngeal trouble. She came under my treatment in May, 1893, when I found that she had consolidation of the apex of one lung, with symptoms of beginning tuberculosis. She had been losing flesh rapidly and was in a depressed, feverish condition. Under inunctions of iodoform and rest in bed she recovered from the acute symptoms in about four weeks, and was in proper condition for removal to the Pocono region. The treatment was continued and she rapidly recovered her health. Her temperature became normal, her pulse became normal, and although a small cavity had formed, resolution took place in the lung to such a degree that very few physical signs of disease could be detected. By December of that year she presented the appearance of a young woman in perfect health and was able to endure a large amount of physical effort without fatigue. She had gained about 30 to 35 pounds and weighed 150 pounds. There being some difference of opinion in the selection of a winter climate, the case now passed from under my treatment. In a warm, enervating climate acute symptoms again set in, which led to a fatal termination at the end of about six months.

Case 26.—Male, white, aged 40 years, was taken sick with acute symptoms of tuberculosis during the early part of 1893. He had had a brother die of consumption six years before, and had himself had a cough, off and on, for six years prior to that date. He came to see me because of a hemorrhage which he had recently had. I found consolidation of the upper lobe of the left lung and all the typical signs of tuberculosis. I placed the patient on iodoform inunctions and tonic treatment, and gave him gradually increasing doses of creosote. He improved under this treatment, which he persevered in conscientiously, and recovered his health to a very great degree, but never got entirely free from cough. By the summer of 1895 he had reached as high as 160 pounds in weight and presented the appearance of good health. He continued his treatment, however, with short intermissions, and maintained a pretty even standard of health until the spring of 1896. At this time, after losing weight for a few weeks, he quite suddenly developed an acute form after an attack of influenza, and was confined to his bed and lost weight very rapidly. The symptoms were so severe and his emaciation so rapid that it looked as though he must necessarily die. He persevered faithfully with his treatment, however, and made desperate efforts to force his nutrition even during the severest part of his illness. During the three months that he was confined to his room he dropped from 141 pounds, to which he had already been reduced before going to bed, to 125 pounds. He again began to convalesce, however, and to rapidly gain in weight, and by July of that year, less than two months after getting up, he again weighed 141 pounds, and by December had reached 167.5 pounds. At present, although he has recently had an attack of influenza, he is enjoying fair health and is attending to his business. He is, however, not entirely well, as bacilli were still present in his sputa when last examined, and he is of course in danger of an extension of the disease at any time.[1]

Case 27.—Female, aged about 50 years, white, single, began to show symptoms of tuberculosis in the early part of 1892. Had nursed a sister with tuberculosis, and not knowing the disease to be contagious, had taken no precautions. She had been a woman of delicate health for years and was, in her normal condition, very thin and spare. She had a deposit in the apex of one lung, a slight cough, but no acute symptoms. Under iodoform inunctions and a tonic treatment she improved very much in health and gained quite a good deal in weight. She improved so much, indeed, that doubts began to arise in the minds of her friends about her ever having had tuberculosis, and in fact, I was myself beginning to have some doubts about my diagnosis. This improvement continued during 1892 and the greater part of 1893. The inunctions, being found rather irksome, were discontinued, but the tonic treatment was kept up with occasional intermissions. In the spring of 1894 a recurrence of the disease took place which left no doubt of the diagnosis, as the disease manifested itself in a rather acute form. The inunctions were again resumed with some improvement, but the disease was never again brought under control. In the fall of 1894 the patient became confined to the house, and died in December, 1894.

Case 28.—Male, white, aged about 19 years, came under treatment for cough and slight fever in the early part of 1894. He had had one sister and one brother die of tuberculosis in recent years, was poorly nourished, rather anemic and presented the appearance of being a bad subject for the disease. He gave a history which raised the question of syphilitic infection, so that there is some doubt about the diagnosis. The symptoms, moreover, were not typical of tuberculosis and it was never possible to outline any definite involvement of the lung. He had, however, loss of flesh, elevation of temperature and pulse above the normal, all of which symptoms indicate tubercular deposit. Under treatment with iodoform inunctions with occasional rest in bed, tonics and forced nutrition he rapidly recovered. By the middle of 1895 he was apparently in good health. He has since enjoyed fair health and has had no recurrence of cough.

Case 29.—Male, white, aged 52 years, came under my treatment during the latter part of 1894. He was then in the third

[1] This patient has died of acute peritonitis, after a few days' illness, since the reading of my paper. Unfortunately, an autopsy was denied me.

stage of tuberculosis, having suffered from the disease for several years. His lungs were so generally affected that I did not expect him to live long and gave the most unfavorable prognosis. I, however, placed him on inunctions of europhen, put him to bed, gave him creosote and tonic treatment. Greatly to my surprise he improved, gained weight and recovered sufficiently to again be able to go out and be about. His expectoration decreased very materially, his cough lessened, and while he did not recover entirely, he regained a condition of health which enabled him, according to his ideas, to discontinue the services of his physician. I have seen the man recently and he is still enjoying about the same health he had when he discontinued his treatment. His case is remarkable because of its improvement when it had apparently advanced to a fatal condition.

Case 30.—Female, white, aged about 40 years, came under my treatment in the early part of July, 1894. She had been delicate all her life and had believed herself to be the subject of tuberculosis years before, but the symptoms which she related would indicate that her fears were ungrounded. The present attack came on after influenza and manifested itself by consolidation of the upper lobe of the right lung, persistent cough and slight elevation of temperature. Under inunctions which were practiced for a long time and tonic treatment the cough disappeared, the lung cleared up and to all appearances the patient got perfectly well. This condition of health continued until the spring of 1897, when she again had an attack of influenza which left the upper lobe of the right lung consolidated. She at present is again under treatment with the europhen inunctions and is improving, although the lung has not yet cleared up and she still has the rapid pulse so typical of tuberculosis.

Case 31.—Female, white, aged about 12 years, had been exposed to tuberculosis in the latter part of 1892 by the presence in her parents' home of an uncle who died there from the disease. She developed the first symptoms about May, 1893, when she began to lose flesh rapidly and had a persistent cough and fever. Clinically her case was typical tuberculosis in the first stage. She was placed upon europhen inunctions and given a tonic. Although her symptoms were so acute that I was induced to give an unfavorable prognosis, she improved very rapidly under the treatment and by September was nearly well. I have heard from her quite recently and she is now enjoying perfect health.

Case 32.—Female, white, aged about 32 years, unmarried, contracted tuberculosis from a sister who died of the disease. She came under treatment in the early part of 1895. When I first saw her she gave a history of having coughed for some years during the winter season without much affecting her health. She had not lost much weight recently and at the time weighed 129 pounds. She had cavities in the apex of the left lung and the presence of tubercle bacilli in the sputum. I gave her tonics, creosote in hot water before meals and directed her to use iodoform inunctions. She improved rapidly and by fall weighed 150 pounds. I increased her creosote gradually until she was taking 35 drops three times a day at the end of a year's treatment, when she weighed 161 pounds and presented the appearance of perfect health, although she still continued to cough and had bacilli present in the sputum. During the spring of 1896 she had a slight extension of the disease, owing to an attack of influenza, which reduced her to 150 pounds in weight and otherwise very materially retarded her progress toward recovery. She continues under treatment at the present time and presents the appearance of good health, weighing 167½ pounds, the highest point reached, but still has bacilli present in the sputa. The bacilli, however, are few in number and show degeneration.

Case 33.—Female, white, Italian, unmarried, aged about 25 years, came under my treatment in January, 1895, having been recommended to me by a fellow practitioner under whose care she had been for a year. She was at that time in bed, having been confined there for some weeks and was laboring under an acute form of tuberculosis which had advanced to the third stage. She had fever, sweats, annoying cough, considerable expectoration and had had some hemorrhages. Her prostration was great and her mental condition was so disturbed as to suggest the possibility of meningeal involvement. Physical examination revealed that the pulmonary trouble was pretty well confined to one lung, although in an active condition. Without hope of improvement I placed her on europhen inunctions and forced her nutrition all I could. Much to my surprise she improved so that during the spring she was able to sit up, and early in the summer was able to go out. She continued her treatment, and at my suggestion went into the pines of New Jersey during the hot summer months and lived out of doors as much as possible. She returned in the autumn very much improved, having gained a great deal in weight and being entirely free from acute symptoms of the disease. The condition of her lung also showed marked improvement. Having heard of Maragliano's new treatment, and having met an Italian physician who had imported some of the serum and who was in a position to administer the treatment, she decided to take it and informed me of her decision. After a few weeks' treatment with the serum she had a severe hemorrhage, from which she died.

Case 34.—Female, white, unmarried, aged 35 years, came to me for treatment during the summer of 1895. She gave a history of a hemorrhage six years before followed by occasional attacks of coughs and delicate health. A recurrence of the hemorrhage took place about eight months prior to seeing me, after which she continuously had a cough, which had become much severer a few weeks prior to her coming under my treatment. When I first saw her she had acute symptoms of tuberculosis in the third stage, and physical examination revealed a large cavity in the right lung to below the angle of the scapula. There was also a deposit in the apex of the left lung. Her case looked very unfavorable, but its long resistance showed excellent resisting power and gave encouragement for treatment. She was, however, very much emaciated, only weighing 101½ pounds. I placed her on europhen inunctions, gave her creosote before meals and tonic treatment consisting of pepsin, hydrochloric acid and strychnia after meals. She improved very rapidly and went away from the city during the summer. When she returned in October she weighed 110½ pounds, was nearly free from symptoms indicating active condition of her disease, except that her pulse was accelerated, but considered herself very much improved. She continued her treatment, although less regularly, and in January, 1896, she was still in very good condition. She continued so well that she stopped her treatment. Quite recently, however, she has had a recurrence of the disease, for which she is now under treatment.

These are some of the cases that came under treatment at an earlier period than two years ago, and that were under treatment long enough to have given a fair opportunity to judge the results. Of the cases that came under treatment within the last two years, many show excellent results, but I will quote only a few.

Case 35.—Male, white, aged about 18 years, had been exposed to tuberculosis in his own family, from a sister dying of it. He was taken down during the summer of 1896. His first knowledge of his illness was by a hemorrhage which was rather severe and which was followed by cough and by much weakness. He had not yet lost much flesh, but became very pale and showed the presence of anemic murmur of the heart. Physical examination did not reveal much wrong with the lungs, although there was impaired resonance in one apex. After a very short time, however, dulness over the apex appeared and prolongation of expiratory murmur. Believing the disease to be tubercular, I placed him on inunctions of europhen and gave him a tonic treatment. He rapidly improved, gained some in weight, and by the end of the year was free from all symptoms of the disease as far as could be determined by physical examination. He continued his treatment, however. During the spring of 1897, he again had some exacerbation of his disease, as manifested by acute symptoms brought on by an attack of influenza, but at the present time he is enjoying fair health and promises to recover.

Case 36.—Male, white, aged 37 years, living in the Allegheny Mountains, contracted tuberculosis while nursing his wife who died from the disease in the early part of 1896. He had no family history of tuberculosis and had always enjoyed good health up to the time of his wife's fatal illness. When he consulted me he had been under treatment for some months with his family physician, and showed acute symptoms of the disease, but no evidence of having advanced beyond the first stage. He had had a recent hemorrhage and acute symptoms of pleurisy. Physical examination revealed a right sided chronic pleurisy with involvement of the apex of the lung. I recommended forced nutrition, the use of europhen inunctions and a tonic treatment. Upon his return home he began this treatment and several months afterward wrote me that he had entirely recovered his health, having regained all his lost weight and being free from cough and pleuritic symptoms.

Case 37.—Male, white, aged about 30 years, had been under treatment for four months before coming to me, during which time he believed himself to be constantly growing worse. He consulted me early in March, 1897, when he was laboring under a semi acute attack of tuberculosis, the deposits being scattered and there being probably a small cavity on the right side, which gave off a very large number of bacilli. He was

very hoarse. An examination of the throat, by Dr. Harrison Allen, revealed a congested condition of the larynx and an ulcer in one nasal passage. At this time he weighed 141½ pounds. Under inunctions with europhen; creosote, pepsin and hydrochloric acid by the mouth, he has rapidly improved so that at present he is almost free from cough, expectorates very little and weighs 160½ pounds.

Case 38.—Female, white, aged 23 years, came to my office for treatment in February, 1897. He gave a history of having been delicate since childhood, and of having suffered from her present illness for a year, during which time she has been under treatment. The cold from which she believed herself to be suffering had continued for a month prior to seeing me. At the time of her first visit she was laboring under a semi-acute attack of tuberculosis, with a small cavity, in the discharges from which there were tubercle bacilli. She weighed 93 pounds. I put her on inunctions of europhen; creosote and pepsin and hydrochloric acid by mouth. She has constantly improved since and at present is in very fair condition, weighing 97½ pounds.

A résumé of the cases that I have treated by this method during the last eight years will probably give the best picture of what can be expected from it. In order that the lesson may be the more practical I will divide the cases into classes:

TABLE 1.—Cases that came under treatment longer ago than two years.

Number of cases		77
" "	now dead	38
" "	now living	19
" "	lost track of (probably living 11, probably dead 9)	20
Total		77

TABLE 2.—Cases that came under treatment within two years.

Number of cases		25
" "	now dead	9
" "	now living	9
" "	lost track of (probably living 5, probably dead 2)	7
Total		25

TABLE 3.—Cases that were under treatment for a longer period than two months.

Number of cases		69
" "	now dead	33
" "	now living	26
" "	lost track of (probably living 4, probably dead 6)	10
Total		69

TABLE 4.—Cases that were under treatment less time than two months.

Number of cases		33
" "	now dead	14
" "	now living	2
" "	lost track of (probably living 7, probably dead 7)	14
Total		33

TABLE 5.—Cases that were in the incipient stage when they came under treatment.

Number of cases		27
" "	now dead	7
" "	now living	12
" "	lost track of (probably living 7, probably dead 1)	8
Total		27

TABLE 6.—Cases in breaking down stage when they came under treatment.

Number of cases		75
" "	now dead	40
" "	now living	16
" "	lost track of (probably living 9, probably dead 10)	19
Total		75

TABLE 7.—General results.

Number of cases treated			102
" "	now dead	47	
" "	probably dead	11	
Total number of deaths		—	58
Number of cases now living		28	
" "	probably living	16	
Total number living		—	44
Grand total			102

TABLE 8.—Detailed results.

Number of cases treated			102
" "	probably dead	11	
" "	now dead	47	
		—	58
Number of cases cured, that is, entirely free from all evidences of disease			15
Number of cases of disease arrested, that is, in good condition of health, but evidences of disease still present			16
Number of cases improved, that is, who attained a fair condition of health, but with no prospect of permanent improvement			15
Total			104
Number who died of intercurrent disease			2
Total number treated			102

The conclusions that I believe myself justified in drawing from this eight years' experience in the treatment of tuberculosis with iodoform and europhen are: 1. That incipient cases can almost always be cured by europhen or iodoform inunctions. 2. That cases advanced to the breaking down stage may be improved very much by this method of treatment and can sometimes be cured. 3. That the treatment ought to be continued even after acute symptoms have disappeared, and that it should be maintained until perfect health is reëstablished.

As to the respective merits of europhen and iodoform, from a therapeutic point of view, both have apparently done equally well in my hands as far as the results are concerned. From an esthetic point of view, the europhen is much to be preferred because it is much less offensive in odor, and can be almost perfectly disguised. I have for almost a year discarded the use of iodoform. The formula which I now employ is as follows:

Europhen	1 dram
Oil of rose	1 drop
Oil of anise	1 dram
Olive oil	2½ ounces

This makes an excellent preparation, giving a perfect solution and being in no wise offensive to the sense of smell. I instruct my patients to rub about a tablespoonful thoroughly into the inside of the thighs and into the arm-pits before retiring at night, and if they have any fear of odor, to sponge themselves with bay rum or bath whisky when rising in the morning. By following these instructions the most fastidious can satisfy themselves that they will not attract attention in public. The treatment is somewhat troublesome, but patients when they once discover that they are deriving benefit from it, not only do not object to its use, but are anxious to employ it. I have had very little trouble on the score of getting patients to persevere with the treatment during the acute or subacute stages of their illness, but only when they have apparently recovered their health. Most people settle for themselves the question whether or not they are well, and I find that when consumptives begin to enjoy a fair state of health they do not care to any longer submit to a troublesome treatment.

It is but proper for me to say further that the majority of cases that I have treated in this way and upon which I base this report, were among the poor and never had the advantage of climate, or of even temporary removal from the city. Indeed, many of them

did not even have the home comforts and the advantages in food which are so important in the treatment of tuberculosis. The results ought therefore to be judged upon a basis of unfavorable environments, for which reasons, in comparisons with other results, some allowance ought to be made. I have no doubt that in sanitoria favorably located, much better results could be obtained by this treatment.

I have long since been convinced that it is the iodin which gives the good results, and that the advantage of using europhen or iodoform through the skin lies in the fact that an even and continuous influence can be maintained on the blood by the gradual absorption of the drugs and the giving off of the iodin in the blood or tissues. I must confess that I have arrived at these views largely by exclusion, because they are the only ones tenable with our present knowledge of the etiology and pathology of tuberculosis. When tuberculosis has once advanced beyond the first stage it is only curable by the establishment of an immunity against new colonies of the tubercle bacillus. This is so because, when the circulation is once cut off from the existing deposit, cure can only take place by either getting rid of that deposit, or by walling it in. Usually nature makes an effort to get rid of the deposit through the process of degeneration and ulceration through the healthy tissues. But inasmuch as the germs have to pass through the healthy tissues when the broken down tissues are being thrown off, reinfection is almost certain to take place unless the individual possesses an immunity which makes it impossible for the germs to again find proper soil for development. This immunity must, moreover, be constant and sufficiently permanent to maintain an incongenial soil until all the germs have been ejected from the organism. The iodin which is given off from the europhen and iodoform into the circulation after its absorption by the skin maintains, I believe, to a certain degree, an immunity which makes new colonization difficult and in this way contributes toward a cure.

Where tuberculosis is still incipient, and where the circulation has not yet been cut off from the nodules, I believe that the iodin, when brought into the system through the europhen or iodoform inunctions, will almost invariably cure. Of the cases of this description that I have treated, most have recovered, although a number had relapses and subsequently died of acute tuberculosis. Some of these cases, however, were constantly exposed to reinfection from other members of the family and may have contracted new attacks.

It is but fair to say that an incipient case of tuberculosis is an unconfirmed case as far as diagnosis is concerned. The diagnosis in incipient cases must necessarily depend upon clinical symptoms, as there is not yet any broken down tissue and there is no possible way in which the tubercle bacillus can be demonstrated. The clinical symptoms of tuberculosis are, however, sufficiently striking and well enough defined to allow of a rational diagnosis. Where we have a rapid pulse, a daily rise of temperature with impaired resonance, or partial consolidation of a part of a lung, with prolongation of the respiratory murmur, there can be little doubt about the nature of the disease which the person is suffering from. We know, moreover, from past experience that persons in this condition, if allowed to go on without treatment, invariably develop into full-fledged consumptives. While there is, therefore, some doubt about the diagnosis of the cases which I have quoted as incipient, they must be accepted as representative cases of their kind and must be allowed to pass as a basis for the conclusions which I have given.

It is proper for me to say, in conclusion, that much of the benefit which I have had in the treatment of the cases quoted in this paper was no doubt due to tonics and creosote. As indicated throughout the paper, I have used creosote in large doses in all cases advanced to the breaking down stage. In such cases I think better results are obtained by using both creosote and europhen than by using either drug alone.

OXYTUBERCULIN IN TUBERCULOSIS.

Read by title in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY J. O. HIRSCHFELDER, M.D.

SAN FRANCISCO, CAL.

Ever since Behring introduced the antitoxin of diphtheria into medical practice, the attention of the profession has been directed to the discovery of a similar mode of treatment for all the other infectious diseases. We have a right to assume that the law of the antitoxins is one of general application, and that that observation which is true of one bacterial disease is true of all. Efforts, however, to produce antitoxins of other diseases than diphtheria, have not led to the striking results obtained in that disease. Various observers, first among them being Paquin in our country, and last Maragliano in Italy, have used serum of animals supposed to have been made immune to the bacillus tuberculosis, but the results, to say the least, have not equaled those in diphtheria. The association of the antitoxic principle with various other ingredients of the blood serum, has led to unpleasant results that have thrown discredit on the method, and have rendered it impossible to use the remedy in effective doses. As we certainly know that the antitoxins are elaborated, in the animal organism, from the bacterial toxins, it is not unreasonable to believe that such an alteration might be effected in the laboratory. Attempts have been made, through electrolysis, to convert the toxins, and have led to encouraging results in the hands of Smirnow, d'Arsonval and Charrin, as well as some others; but no practical application of the method has yet been made. None of the theories formulated to explain the production of the antitoxins has been universally received, nor has chemic analysis given data to permit us to recognize a difference between the toxins and the antitoxins, otherwise than through their biologic effects. The theory that the oxidation of the toxins leads to the production of an antitoxic substance, which I enunciated in August, 1896, is one that has in it an inherent element of probability, independent of clinical demonstration.

My experiments have been conducted mainly with the toxin of tuberculosis, and have led to verification of the hypothesis, in the experimental as well as in the clinical domain.

As stated in previous publications, I have produced this oxidation by the action of the peroxid of hydrogen at 100 degrees C. The method has been to filter a sterilized fully grown culture of the bacillus tuberculosis upon alkaline glycerin veal bouillon, and to add one-tenth the volume of ten volume solution of peroxid of hydrogen to such tuberculin; to maintain the mixture at 100 degrees C. for twelve hours, then to add the same quantity of the peroxid, and to repeat

the process until the quantity added shall equal that of the tuberculin used. The final mixture is then heated for twelve hours more; that is to say, the tuberculin is subjected to the action of the peroxid at 100 degrees C. for one hundred and twenty hours. The resultant oxytuberculin is darker than the tuberculin, is highly acid and somewhat turbid. It contains an excess of peroxid of hydrogen. In order to drive this off, the solution is made alkaline with caustic soda, which at the same time clarifies the mixture. It is heated for a short time, which darkens it still more, and is now found to contain no peroxid of hydrogen. To those unfamiliar with the peroxid of hydrogen, its persistence in a complex organic fluid is a matter of some surprise. Such I would refer to Danner's "Handbuch der Anorganischen Chemie," wherein the statement is made that some organic substances, such as urea, albuminoids and gluten, are without action on hydrogen peroxid, while others are slowly decomposed by it, with the evolution of carbon dioxid containing oxygen. That tuberculin belongs to the class of those substances which are slowly affected by the peroxid has been absolutely proven, for I have produced characteristic tuberculin reactions, in consumptive patients, with tuberculin that has been treated for thirty hours with the peroxid of hydrogen, and fainter effects with some treated even longer. If we add alcohol to tuberculin a white, flaky precipitate occurs, that is readily soluble in water. If to the oxytuberculin absolute alcohol is added, a brown extractive-like substance forms, which is likewise soluble in water and from which solution it may be reprecipitated by alcohol. No matter how often the process of solution and precipitation occurs, the appearance of the precipitated oxytuberculin always remains the same. It resembles caramel very much in color and consistency. No chemic comparison has yet been made between the precipitated tuberculin and the oxytuberculin, but the appearance of the latter suggests partial oxidation. Absolute proof can not be attained until the elementary analysis shall have been made. The name given to the preparation has misled several, who supposed the oxytoxin was regarded as an oxygen carrier. This is not the case. The name was selected to indicate that we probably had an oxidized toxin.

Whether this oxytoxin be the substance which develops in the economy or not, it possesses certain very valuable properties such as are not present in any of those thus far found in the antitoxic serums. Most prominent among these is its inhibitory influence upon the growth of the germ. If we make our tuberculin alkaline by adding 3 c.c. of a normal carbonate of soda solution to a liter of the neutral liquid and mix it with an equal quantity of veal bouillon equally alkaline, the bacillus of tuberculosis will grow on it with great rapidity. If instead we use oxytuberculin prepared from the same tuberculin, absolutely no growth will occur. Not only so, but the inhibitory power of the oxytuberculin can be accurately gauged, so that its potency can be measured, and different preparations thus compared with each other.

The following experiment will illustrate the method: To 10 parts of alkaline glycerin veal bouillon were added water made three-tenths normal alkaline and oxytuberculin likewise three-tenths normal alkaline, in a series containing 10 to 0 parts of water with 0 to 10 parts of oxytuberculin; so that we had a gradually increasing strength of oxytuberculin from 0 to 50 per cent. Each of the flasks was inoculated with a rapidly growing virulent culture of bacillus tuberculosis, and it was found that as the percentage of oxytuberculin increased the growth became less and less vigorous, and was completely prevented in that containing 7 parts in 20. This sample of oxytuberculin having been diluted to 30 per cent. may therefore be designated as 300 per cent. strong. Unfortunately, some of the bottles became contaminated with other germs and only seven out of ten bottles could be preserved. The photograph (Fig. 1) clearly shows the gradually increasing inhibitory power of the substance.

In a similar manner any oxytuberculin may be standardized, so that when we use it we may know accurately how potent is the remedy that we are employing. Such a method of estimating the strength of a preparation is infinitely superior to that of judging it from its effect upon more or less resistant animals.

From the very beginning of the experiments it had been my purpose to find some means of knowing how long I should continue the oxidation in order that all the tuberculin should be changed into oxytuberculin and none of the latter destroyed. There was no chemic test known and all my efforts to find one were in vain. I was therefore compelled to make use of the reaction of tubercular guinea pigs to find the point at which no effective tuberculin could be found. It is clear that a certain amount of the tuberculin might be present but neutralized in its effects by the oxytuberculin. Under such circumstances we would get no deleterious tuberculin influence, but still not the best possible oxytuberculin action. In the manufacture of the oxytuberculin, I had gradually come to lengthen the time during which I heated the tuberculin with the peroxid of hydrogen, and had finally decided upon sterilizing for four days. Oxytuberculin so prepared gave excellent results and no reactions, until I happened to use large doses (40 c.c.) with a highly sensitive hospital patient. A slight rise of temperature occurred, which made me feel that all the tuberculin had not been converted. About this time I had discovered the inhibitory influence of the oxytuberculin, and I immediately concluded that this influence would teach me what was the best length of time to continue the oxidation. I reasoned that if my theory were right, as I continued the oxidation the inhibitory power must gradually increase until the maximum is reached, and as the oxytuberculin produced is gradually destroyed by further oxidation, from this point on there must be a gradual decline of the inhibitory power. Such, indeed, was the result obtained. I sterilized for 176 hours, adding the peroxid every twelve hours and removing portions of the lymph for comparison at 96, 120, 144 and 156 hours. The final oxytuberculin, that sterilized 176 hours, contains but 53 per cent of the quantity present in that sterilized only ninety-six hours, and in order to make a fair comparison, after free peroxid in all the preparations was removed by rendering them alkaline and heating, all were diluted to the same proportion with distilled water, the quantity added depending upon the degree to which it had been diluted in the process of preparation by addition of peroxid of hydrogen which had become changed to water. All of the preparations were then neutralized and 0.3 per cent. normal carbonate of soda was added. Each of the oxytuberculins was mixed with an equal quantity of standard veal bouillon and inoculated with a pure culture of the bacillus tuberculosis. As a control, standard veal bouillon was mixed with an equal quantity of water

to which 0.3 per cent. normal carbonate of soda was added, and was likewise inoculated with the same germ. The relative growth is shown on the chart and by the photograph of the bottles in which they have developed (Fig. 2).

Figure 1.

Oxytuberculine 73 C (156 Hours) Inoculated Tub Feb. 25/97
Oxytuberculine No 73 A 120 Hours Inoculated Feb. Feb. 25/97
Veal Bouillon Inoculated Tub. Feb. 25/97
Oxytuberculine 73 D (96 Hours) Inoculated Feb. 25/97
Oxytuberculine No 73 B (144 Hours) Inoculated Feb. 25/97
Oxytuberculine No 73 (96 Hours) Tuber. Feb 25/97.

Figure 2.

They show rapid growth in the veal bouillon, less in the 96 hour oxytuberculin, and hardly any in the 120 hour oxytuberculin, which had been diluted with water and veal bouillon to only 26.5 per cent. In the 144 hour tuberculin growth increased, was greater in the 156 hour preparation and in that sterilized 176 hours, was almost as great as in the pure veal bouillon This simple little experiment not only confirmed our previous culture tests, but likewise taught that at least 120 hours and less than 144 hours are necessary to get the best results. In point of fact, as soon as I began to use oxytuberculin, so prepared, on my patients, immediate and striking results occurred such as I had not witnessed before. I shall now narrow the range still more by tests of oxytuberculin

heated for different periods between 120 and 144 hours. I have done this in part with another sample of oxytuberculin that was sterilized for 144 hours and a portion removed after 134 hours sterilization. These were made alkaline as before, and each mixed with an equal quantity of standard veal bouillon. They were inoculated with tuberculosis at the same time as was veal bouillon. Three cultures of veal bouillon and four each of 134 and 144 hour oxytuberculin were made. All of the veal bouillon and all the 144 hour oxytuberculin showed vigorous growth, but none of the 134 hour oxytuberculin, as may be seen from the photographs. (Fig. 3.)

This action of oxytuberculin is entirely specific, for other germs will develop with great facility in it. In fact, to prevent such growth and consequent decomposition, it has become necessary to add 5 per cent. of boric acid as a preservative for therapeutic purposes.

As was probable from the culture experiments just described, the same law applies to other germs as well. With them likewise the oxytoxins prevent growth, but the length of time necessary to continue the action of the peroxid of hydrogen varies with the different germs, and possibly with different culture media. Provisional experiments, in order that all the conditions might be as similar as possible, were made with growths in alkaline veal bouillon. These were sterilized by heat, filtered, and acted upon by peroxid in the steam sterilizer, just as was the tuberculin. This is, in all probability, not the best method of getting good results, as the toxins of many germs are destroyed by heating. It would be better to obtain the toxins in the usual manner, by cold filtration. Still the provisional experiments give results which prove the universality of the law and tentative treatment of typhoid fever on these lines has given very encouraging results.

The following tables will show the inhibitory action of the oxytoxins with four germs:

MICROCOCCUS UREÆ.

Hours of Oxidation.	HOURS OF GROWTH. 24	30	43	70
43	?	Growth	Growth	Growth
65	No	No growth	No growth	No growth
90	No growth	No growth	No growth	No growth
125	No growth	No growth	No growth	No growth
130	No growth	No growth	No growth	No growth
Pure veal bouillon	Growth	Growth	Growth	Growth

TYPHOID.

43	Growth	Growth	Growth	Growth
65	Growth	Growth	Growth	Growth
90	Growth	Growth	Growth	Growth
125	Growth	Growth	Growth	Growth
130	No growth	No growth	No growth	No growth
Veal bouillon	Growth	Growth	Growth	Growth

DIPHTHERIA.

43	Growth	Growth	Growth	Growth
65	No	No	No	No
90	No	No	No	No
125	No	No	No	Slight
130	Growth	Growth	Growth	Growth
Veal bouillon	Growth	Growth	Growth	Growth

STAPHYLOCOCCUS.

43	Growth	Growth	Growth	Growth
65	Growth	Growth	Growth	Growth
90	Growth	Growth	Growth	Growth
125	Growth	Growth	Growth	Growth
130	No	No	No	No
Veal bouillon	Growth	Growth	Growth	Growth

FIRST STAGE.

No.	Name.	Days Treated.	Bacilli. Before.	Bacilli. After.	Cured.	Much Improved.	Slightly Improved.	Unchanged.	Worse.	Dead.
1	F. A. A.	134	Moderate	None	1					
2	M. L.	16	None	"	1					
3	W. Q.	305	"	"	1					
4	R. W. R.	106	"	"	1					

SECOND STAGE.

1	E. G.	258	Large	None	1					
2	W. M.	75	Moderate	Not Examined		1				
3	N. R.	83	Large	Hardly Any		1				
4	F. S.	91	"	Mod. Large		1				
5	Father S.	99	Moderate	None	1					
6	V. C.	100	None	"	1					
7	C. V.	90	Moderate	"	1					
8	T. L.	180	Large	"		1				
9	R. W. R.	36	None	"		1				

THIRD STAGE.

1	D. B.	26	Moderate	Not Examined				1		
2	A. D.	254	Large	None	1					
3	E. E.	37	"	Not Examined		1				
4	A. G.	126	Moderate	Large		1				
5	F. I.	162	Large	None		1				
6	M. L.	31	"	Large			1			
7	J. M.	141	"	Hardly Any		1				
8	S. M.	365	"	Moderate		1				
9	A. M.	30	"	Not Examined		1				
10	C. M.	22	Moderate	" "			1			
11	R. M.	231	Large	Moderate		1				
12	H. P.	285	"	None		1				
13	T. P.	33	"	Not Examined				1		
14	L. F.	40	Moderate	" "			1			
15	F. A. S.	198	"	Moderate		1				
16	C. H. W.	42	Large	Large		1				
17	M. W.	146	Moderate	Few		1				
18	J. W.	254	Large	None	1					
19	T. M.	250	"	Moderate		1				
20	F. D. R.	300	"	None		1				
21	W. H.	280	"	Moderate		1				
22	M. W.	120	Small	Small		1				
23	P. S.	40	Moderate	Moderate		1				
24	J. D.	30	Large	Large		1				
25	T. T.	80	"	Moderate		1				

FOURTH STAGE—OLD METHOD.

1	M. A.	123	Large	Large				1		
2	E. B.	48	"	Not Examined						1
3	F. B.	77	"	" "						1
4	H. C.	72	"	" "					1	
5	M. G.	106	"	" "					1	
6	G. A. H.	132	"	" "						1
7	A. H.	48	"	" "				1		
8	G. H.	54	"	" "					1	
9	L. H.	30	"	" "					1	
10	J. Mc.	100	"	" "						1
11	J. R.	102	"	" "					1	
12	G. St. D.	77	"	" "					1	
13	O. R.	120	"	" "				1		
14	J. H.	39	Moderate	" "				1		
15	A. V.	135	Large	Few					1	
16	H. F.	90	"	Not Examined		1				

FOURTH STAGE—NEW METHOD.

1	D. A. C.	172	Large	Moderate				1		
2	C. F.	165	"	"			1			
3	T. J.	104	"	Not Examined					1	
4	G. A. K.	57	"	" "						1
5	J. M.	481	"	None	1					
6	J. M.	365	"	Hardly Any		1				
7	B. M.	363	"	Very Few		1				
8	W. R. R.	54	"	Large				1		
9	P. P.	235	"	Moderate		1				
10	G. Ph.	199	"	"		1				
11	D. H.	130	"	"		1				

GENERAL SUMMARY.

Stage.	Total No. Treated.	Cured.	Much Improved.	Slightly Improved.	Unchanged.	Worse.	Died.
Fourth Stage (Old Method)	16		1	2	3	6	4
Fourth Stage (New Method)	11	1	5	1	2	1	1
Third Stage	25	2	18	2	3		
Second Stage	9	4	5				
First Stage	4	4					
Total	65	11	29	5	8	7	5

It having been suggested that possibly the inhibitory influence exerted might be due to the action of the peroxid of hydrogen on veal bouillon, the latter was oxidized in a similar manner for 130 hours and no inhibitory effect found.

The results obtained in medical practice by the therapeutic use of this oxytuberculin, both in my own hands and those of such of my colleagues as have employed it have been more than encouraging. We have been so often deceived in our expectations that it is wise to be cautious before we accept a new remedy for tuberculosis, but the results obtained with oxytuberculin are so striking and so rapid that they can not be accidental. Injections are made into any part of the body under ordinary aseptic precautions. I begin with 5 c.c. daily, gradually increasing to 20 c.c. with which dose it is ordinarily well to continue. As much as 100 c.c., or the equivalent of 5 c.c. of Koch's concentrated tuberculin, has been injected into one patient without the slightest unpleasant local or constitutional effect. The liquid causes no greater local disturbance than would any indifferent fluid. There is no reddening of the skin nor other sign of localized inflammation. In a few minutes the fluid injected is absorbed and the patient has no further inconvenience except sometimes a slight smarting at the site of injection. There is no reaction, no rise of temperature, nor any other unpleasant constitutional effect. In a short time marked results occur in early cases. The color of the patient improves, his cough and expectoration diminish and a feeling of vigor soon develops. This is especially evident in cases of the first stage where there is no fever. Where only slight fever is present the higher temperature soon diminishes, and in many cases becomes entirely normal. At the same time, the infiltration of the lung diminishes and gradually disappears, so that the most careful physical examination fails to reveal any deviation from the normal whatsoever after the treatment is completed. The bacilli of tuberculosis in the sputum may rapidly diminish in number and in many cases disappear entirely. In visible tubercular infections, such as those in the larynx, the resolution of the tubercular infiltration can be watched with the laryngoscope. A number of such cases have been observed by me and by my colleagues. A case of tuberculosis of the skin was treated by local applications of oxytuberculin and rapidly cured. As confirmatory of the value of this observation I will refer to an experiment made on a dog. This animal was vaccinated upon the skin, with a virulent tuberculosis bacillus. Soon ulcera, shown by the enlarged photograph of the excised piece of skin, developed (Fig. 4). These contained the bacilli in pus and tissue. The dog was treated by injections of oxytuberculin and soon recovered, the ulcera disappearing and the skin assuming the normal appearance, as you can see from the photograph (Fig. 5).

Figure 3.

Of the cases that I have treated with the oxytuberculin, those who came in the very early stage of the disease before cavities were present, have been rapidly cured. By cure I mean a complete cessation of cough and disappearance of all symptoms of disease on the part of the patient, together with the return of a normal condition of the lung as shown by physical examination. Above all do I demand that the bacilli of tuberculosis shall no longer be found in the sputum.

Figure 4.

Cases that were moderately advanced have likewise rapidly improved and some have entirely recovered.

Of the very advanced cases many have shown marked improvement and many whom I had declined to treat, as being too far advanced, but who pleaded so hard for treatment that I could not refuse, have surprised me by the wonderful improvement they have shown.

Some, in the last stages of the disease, who presented themselves with high fever, cyanotic and gasping, have died. No treatment should be expected to reach such cases. They throw a cloud upon the statistics, for they must be honestly reported with the more favorable cases. I shall therefore present to you statistics of all the cases I have treated with oxytuberculin, but request you not to judge by the advanced cases, for which I make no claim whatsoever.

In order to systematize our observations, I will divide the cases into four sets, depending upon the stage of the disease.

In the first stage, we find infiltration of the lung, with more or less pallor, loss of weight, cough with sputum containing bacilli of tuberculosis. These may be absent at repeated examinations and yet finally be found.

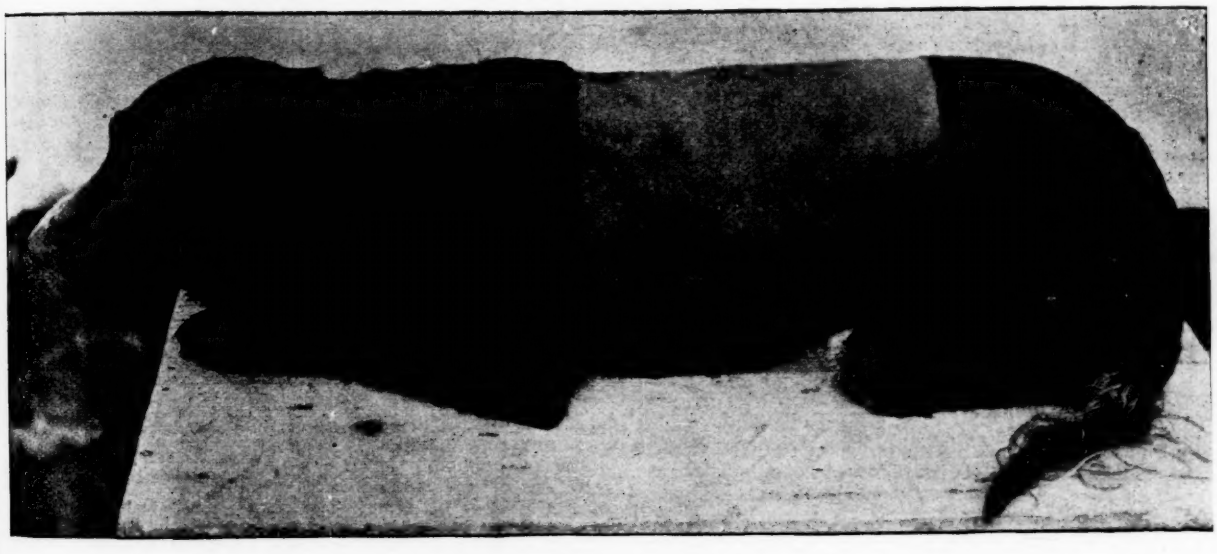

Figure 5.

In the second stage, we have infiltration of the lungs, with hectic fever, emaciation, large quantity of the sputum containing bacilli of tuberculosis, but no cavities.

In the third stage, we have cavities, but still a fair degree of vigor. There is no dyspnea when the patient is quiet, but marked shortness of breath on exertion.

In the fourth stage we have large cavities, with the usual signs of advanced consumption—the dyspnea is very decided even when at rest.

The distinctive features are:

Stage 1. Slight infiltration of the lungs.

Stage 2. Extensive infiltration of the lungs.

Stage 3. Cavities, with dyspnea on exertion and none when at rest.

Stage 4. Cavities with dyspnea when at rest.

Many of the cases have been seen by other physicians before and during the treatment. My colleagues have confirmed my observations and I am certain that they will agree that I have not erred in making my reports too favorable. It has been my purpose to be as skeptical as possible, and I have striven to make the showing rather less favorable than too much so. I find that the cases treated, with oxytuberculin insufficiently oxidized, did not give the same results as those treated with the newer preparation, and have therefore separated them into a distinct table.

THE CLINICAL SYMPTOMS, BACTERIOLOGIC FINDINGS AND POSTMORTEM APPEARANCES IN CASES OF INFECTION OF HUMAN BEINGS WITH THE BACILLUS PYOCYANEUS.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY LEWELLYS F. BARKER, M.D.

ASSOCIATE PROFESSOR OF ANATOMY, JOHNS HOPKINS UNIVERSITY, AND ASSISTANT RESIDENT PATHOLOGIST, JOHNS HOPKINS HOSPITAL. BALTIMORE, MD.

[ABSTRACT.]

[From the Pathological Laboratory of the Johns Hopkins Hospital and University.]

The literature of the bacillus pyocyaneus with especial reference to its pathogenic effects in human beings was reviewed. Especial reference was made to the experimental work of Charrin on animals and to the human infections reported by Oettinger, Ehlers, Jadkewitch, Neumann, Schaefer, Karlinsky, Ledderhose-Jakowski, Gruber, Martha, Krannhals, Calmette, Monnier, Ernst, Fowler, Adami and Williams, Kossel-Blumer, Williams and Cameron, Lavender, Pesand, Gradenigo, and Le Noir. There can no longer be any doubt that in addition to the more or less accidental appearance of blue pus in surgical cases that the bacillus pyocyaneus is capable of entering the human organism and setting up disease processes of variable intensity sometimes of a violence leading to a fatal issue. The writer reported eleven such cases which had come under his personal observation. These eleven cases were independent of the instances in which ordinary blue pus occurred and are examples of infections in which the bacillus pyocyaneus could be held directly responsible for definite lesions. The frequency of such infections may be calculated from the statement

that out of some 800 consecutive autopsies made, eleven such occurred. That they were discovered depends upon the fact that a systematic bacteriologic study of all the autopsies made at the Johns Hopkins Hospital is insisted upon by Professor Welch. No detailed description of the autopsies and histologic lesions was given as they are to be reported in full later. The cases were from the wards of Drs. Osler, Halsted and Kelly. The autopsies were made by Drs. Welch, Flexner, Blumer, Livingood and the writer.

Case 1.—Thomas P., white, aged 20; operated upon for acute abdominal symptoms suggesting obstruction. At operation bowels greatly distended, wall of gut paralyzed, deeply congested; small intestine very friable; torn at one spot; death same night. At autopsy (March 10, 1893) general peritonitis, marked distension and hemorrhagic discoloration of intestine; necrosis and ulceration of surface of small gut; acute colitis; very marked enlargement of mesenteric glands with suppurating inflammation in some of them. Bacillus pyocyaneus present in enormous numbers (along with bacillus coli communis) in the peritoneal exudate and (pure) in the mesenteric lymph glands. Large masses of bacillus pyocyaneus on surface of gut.

Case 2.—Richard B., negro aged 40, with extensive skin disease resembling acute exfoliative dermatitis. Death from broncho-pneumonia. At autopsy Aug. 14, 1893, hemorrhages and thromboses were found in the neighborhood of the skin lesions. Broncho-pneumonia, necrotic foci in the liver, adherent pericardium, heart hypertrophy with fatty degeneration; bacillus pyocyaneus in the lung and in the cutaneous lesions. Another bacillus carefully studied, but not identified as any known organism, in the kidney, liver and spleen.

Case 3.—E. A. L., middle aged man, dead of peritonitis following operation for appendicitis. At autopsy, Nov. 10, 1893, fibrino-purulent peritonitis; broncho-pneumonia; pulmonary edema; most extensive diphtheritic inflammation of esophagus (with necrosis and hemorrhages), stomach and intestine, especially of the small intestine. Paralysis of wall of small gut with dilatation; acute nephritis; fatty degeneration of heart, liver and kidney; bacillus pyocyaneus present in enormous numbers on the surface of the esophagus, in almost pure culture. Histological study of sections from the esophagus and alimentary tract showed large masses of the bacillus pyocyaneus on the surface over the necrotic areas. Many of the necroses in the esophagus go into the submucosa. Extensive hemorrhages in neighborhood of necroses; thromboses of blood vessels of mucous membrane; hyperplasia of lymphatic apparatus.

Case 4.—James L. W. Extensive epithelioma of cheek and neck extending to mouth, lung, pharynx and bone. Metastases in cervical and axillary lymph glands. At autopsy, March 15, 1894, bronchitis, extensive broncho-pneumonia, chronic Bright's disease, congestion and edema of lungs; bacillus pyocyaneus in pure culture in broncho-pneumonic exudate.

Case 5.—Mary S., autopsy April 12, 1894, large sloughing and gangrenous spindle-celled sarcoma of sacrum; extraperitoneal, filling up pelvis, larger than the head of a child. Cæsarian section had been done about a year before. Linear scar in uterus; hemorrhagic purulent cystitis: ureteritis and pyelonephritis; old peritoneal adhesions; no fresh peritonitis; acute bronchitis; pulmonary emphysema; encapsulated trichinæ in muscles. The bacillus pyocyaneus was obtained in cultures from the gangrenous part of the tumor; also in large numbers from the dilated pelvis of the kidney. Streptococcus pyogenes present in the lung, kidney and spleen, as well as in the sloughing tumor.

Case 6.—Lizzie K., white; autopsy May 29, 1894. Unresolved pneumonia with carnification of right lower and part of middle lobe; sub-acute pleurisy on right side with organizing exudate; hyperemia and edema of rest of right lung; emphysema, edema and congestion of left lung with multiple areas of consoldiation in lower lobe; bronchi congested; mucus and pus in trachea; old pleural adhesions: encapsulated diaphragmatic empyema on right side; subacute suppurative pericarditis (pyopericardium with about 500 c.c. of greenish yellow pus); cloudy swelling of kidneys, slight chronic diffuse nephritis with beginning arterio sclerotic change; liver deformed and fatty; spleen enlarged and rather firm; enteroptosis and gastroptosis; acute cystitis with ecchymosed mucous membrane. On the folds are hemorrhagic reddish black crests capped with a grayish white necrotic layer. One hemorrhoidal mass ulcerated on the surface. Erosion of the cervix of the uterus.

From the necroses in the bladder great numbers of bacillus pyocyaneus were obtained in pure culture. Micrococcus lanceolatus in the unresolved pneumonia, in the pyopericardium and in the empyema.

Case 7.—Theresa S. Autopsy June 15, 1894. Chronic pelvic cellulitis and peritonitis (uterus, tubes, ovaries embedded in dense fibrous tissue with old peritoneal pelvic adhesion); left ovarian abscess (greenish yellow burrowing pus); recto vaginal fistula; ulceration of small and large intestine; perforation size of a dime in lower part of sigmoid flexure; acute peritonitis; marked dilatation of small gut, especially in lower part. On surface of small intestine beginning at a point 130 cm. above the valve shallow ulcerations begin to appear at first involving only the mucous membrane. Many of them have hyperemic bases with tendency to run along the edges of the cross folds of the gut. As the ileo-cecal valve is approached, the ulcers become larger and deeper and some of them measure 2x1.5 cm.; margin slightly undermined with ragged necrotic base. Peritoneal surface corresponding to ulcers, smooth; similar ulcers in cecum and ascending colon; ulcers in still greater numbers in transverse and descending colon; two large ulcers in rectum; mucous membrane of rectum absent for a distance of 6 cm. above the anus. Circular perforation of rectum 2 cm. above the anus communicating with vagina through posterior wall; mucous membrane of stomach hyperemic and ecchymosed. The ulcers differed from typhoid ulcers in that they were more shallow and were devoid of sloughs and medullary infiltration. Hyperemia and hyperplasia of mesenteric lymph glands; fresh vegetative endocarditis of mitral valve; pulmonary emphysema; purulent bronchitis with bronchiectases; acute fibrino-purulent pleuritis; double hypernephrosis with renal atrophy; elephantiasis vulvæ; amyloid disease of spleen and kidney.

Bacillus pyocyaneus present in ovarian abscesses, bronchial exudate, in bladder, on mitral valve, in pelvis of kidney and in large numbers in the intestinal ulcers and in the peritoneal exudate. The bacillus coli communis was present in the peritoneal cavity, in the pelvis of the kidney, in the spleen and pleural cavity.

Case 8.—B. O., white. Autopsy June 17, 1894. Chronic productive endocarditis of mitral valve; mitral stenosis and insufficiency; calcified nodule in aortic valve; aortic insufficiency; general heart hypertrophy and dilatation; arterio-sclerosis; chronic passive congestion; cirrhosis of liver; chronic diffuse nephritis; catarrhal colitis with shallow ulcers; acute sero-fibrinous pleurisy on left side; acute peritonitis; fatty degeneration of the heart and liver; a few shallow ulcerations in large intestine, involving only mucous membrane.

Bacillus pyocyaneus in pure culture from the peritoneal cavity. Bacillus coli communis and a second unidentified bacillus in the pleural exudate. Cultures from kidney, heart's blood and bile, sterile.

Case 9.—T. S., male. Autopsy July, 1894. Extreme dilatation of pelvis of right kidney, containing purulent urine; abnormal opening of right ureter into part of renal pelvis; healed operation for femoral hernia; gallstones; pulmonary emphysema and edema; fatty heart, liver and kidney; chronic diffuse nephritis on right side; superficial erosions in large intestine, cultures from which yield large numbers of bacillus pyocyaneus; bacillus pyocyaneus also obtained from interior of gallstones.

Case 10.—Rosie W. Autopsy April 1, 1895. Diffuse carcinoma of stomach, involving omentum and gastric lymph glands; metastatic carcinoma of liver, kidney and peritoneum; acute broncho-pneumonia; healed tuberculosis; chronic nephritis; sub-acute and chronic pericarditis with a few tubercles in the pericardium. Cultures from pericardial exudate yield many colonies of bacillus pyocyaneus. A few colonies of bacillus pyocyaneus obtained from the peritoneal cavity and from the kidneys. Streptococcus pyogenes in the lungs and in the kidney.

Case 11.—Wm. S., white, aged 62 years. Autopsy Dec. 16, 1896. Sloughing and gangrenous ulcerative cancer of neck with extension into the surrounding tissues, including sterno-cleido-mastoid muscle; pulmonary emphysema; hypostatic pneumonia; tumor metastases in lungs; arterio-sclerosis; fatty degeneration of heart and kidneys. In the pneumonic exudate and heart's blood the bacillus pyocyaneus was present. In addition there was a general streptococcus infection setting out from the sloughing ulcer.

After a recital of the above eleven cases personally met with, the writer proceeded to briefly marshal the evidence thus far available for the view that the bacillus pyocyaneus can be pathogenic for human beings.

It is well known that the pyogenic organisms in general can produce very different sorts of disease processes situated in very different parts of the body

They may cause local infections of one or more of the mucous or serous membranes or may give rise to general infections and intoxications. Some of them are more prone to cause the local processes, others more often are concerned in the production of general infections. Even the same bacterium in different instances according to its virulence or to the varying resistance offered by its host can lead either to local or general processes.

The writer showed that the bacillus pyocyaneus can be concerned in acute local infections of the most various mucous membranes, of the skin, of nearly all the serous membranes of the body, and that it can give rise to general infection, and more often still to instances of general acute intoxication. There is some evidence also that the bacillus pyocyaneus can be the cause of chronic infections and intoxications in human beings.

Of the acute local infections due to it, ovarian abscess has been met with by the writer; three cases of liver abscess are mentioned by Kruse and Pasquale. Jakowski found the bacillus pyocyaneus present as the pathogenic agent in two out of 200 suppurative processes. In the mucous membrane of the alimentary tract superficial and deep inflammations of various sorts are common with this bacillus as an etiologic factor. Thus in the intestine there may be superficial erosion, acute hemorrhagic and necrotic enteritis, shallow ulceration or deep ulceration due to the action of this organism. The most remarkable lesions in the esophagus were found in the writer's Case 3. The mucous membrane of the stomach may be involved. Along with these lesions of the alimentary tract it is common to find paralysis of the wall of the gut, hemorrhages, necroses and ulcerations, accompanied by enlargement and sometimes by suppuration of the mesenteric lymph glands.

Suppurative processes in the middle ear (Gruber, Pes and Gradenigo), in the antrum (Kossel) and nasopharynx are not infrequently due in human beings to the bacillus pyocyaneus. Bronchitis and bronchopneumonia may be due to this bacillus (Monnier and the writer). The latter has noticed the tendency to hemorrhages and to paralysis of the smooth muscle of the bronchi in such cases.

Severe hemorrhagic and necrotic cystitis, ureteritis and pyelonephritis with paralysis of the muscular walls have been met with by the writer.

In cutaneous and subcutaneous inflammations, the bacillus pyocyaneus has been met with in human beings. These may consist of gangrenous processes (Fowler and the writer), of suppurative phlegmon (Kraus and Buswell), of vesicular eruptions (Oettinger and Ehlers), or of acute exfoliative processes (the writer). The greatest care, however, should be exercised before making definite statements concerning the pathogenicity of the bacillus in cutaneous lesions.

Of the serous membranes which may be infected may be mentioned: 1. The pericardium, in cases thus far reported in association with the tubercle bacillus (Ernst and the writer). 2. The peritoneum, often in association with the bacillus coli communis (the writer's cases 1, 2, 7 and 8). 3. In meningitis (Kossel, Pesina and Honl). 4. In the endocardium (case 7). 5. In joint surfaces (Schurmayer). It apparently has not yet been met with in pleuritis, but doubtless will be found in this process.

That the bacillus pyocyaneus does enter the blood, giving rise to a general infection of the organism, there can no longer be any doubt. The cases of Oettinger, Ehlers and Neumann show that it can give rise to a definite general hemorrhagic septicemia, accompanied by a vesicular skin eruption, yielding a clinical picture not unlike typhoid fever. The accidental experimental infection associated first with general symptoms, and later with a subcutaneous phlegmon produced in a human being by Kraus and Buswell is a unique observation and extremely important for the establishment of the pathogenicity of the bacillus pyocyaneus. In the writer's experience, however, the bacilli are very rapidly filtered out of the blood by the organs, and thus the cases in which at autopsy the bacillus pyocyaneus is found in several or even a large series of organs, are explicable (Cf. the writer's Cases 2, 7, 10 and 11).

In the cases in which local infection has occurred, and especially in those in which large surfaces like the mucous membrane of the alimentary tract have been involved the phenomena of *general acute intoxication* are common, giving rise clinically to fever, delirium, albuminuria and meteorism, phenomena which can also be produced experimentally in animals by means of injection of the toxins of the bacillus pyocyaneus. At autopsy one finds the pathologic evidences of intoxication; namely, vasomotor disturbances, hemorrhages, focal necroses, parenchymatous lesions in the heart and liver, spleen and kidneys. A very common phenomenon is paralysis of the smooth muscle of the intestinal wall, of the bronchial wall, and of the urinary bladder.

In view of the remarkable results of experimentation on animals, obtained by Charrin, chronic forms of infection with the bacillus pyocyaneus and intoxication with its products may be expected. Charrin has proven the possibility of producing as a remote effect of infection with this microörganism the most various acute and chronic degenerative processes in the nervous system, not unlike many of the syphilitic changes to which the nervous system is liable. It is interesting to find a human case reported by Jadkewitsch in which recurrent paralysis and other nervous phenomena existed in association with repeated infections in the same individual with the bacillus pyocyaneus.

It is evident, the writer concluded, from the data at hand, that the bacillus pyocyaneus is definitely pathogenic for human beings and is capable of causing a whole series of lesions, acute and chronic, of very different sorts. He laid particular stress on the cases of general infection and intoxication; on the various forms of intestinal ulceration, which are not at all uncommon; on the broncho-pneumonias; on the infections of the genito-urinary tract, and on the remarkable form of esophagitis which he reported.

Infections with this microörganism are not confined to children, as many authors believe, but are also relatively frequent in adults. The cases of pyocyaneus infection in human beings are in reality probably much more common than have been supposed, for so far the cases which have recovered have for the most part passed unrecognized.

The question of diagnosis during life was referred to. The general course of the disease, especially if associated with diarrhea and paralysis of the wall of the intestine, is important for diagnosis. The cutaneous blebs which sometimes occur are said to contain the bacillus pyocyaneus. It must be remembered, however, that the bacillus pyocyaneus is frequently

present in the normal skin, especially in its folds. Bacteriologic cultures from the urine, in suspected cases, will be helpful, as this bacillus has been shown by Le Noir and the writer to be present in the urine in some cases of human infection, and by the latter it was almost constantly found in the urine of animals experimentally inoculated with the bacillus. One difficulty met with in the bacteriologic diagnosis is the fact that the bacillus often grows colorless and may pass unrecognized unless special media favorable for color production be employed. The bacillus pyocyaneus is motile and serum diagnosis analogous to Widal's test for typhoid fever is applicable.

The cases, if recognized during life, are best treated by anti-pyocyaneus serum. The writer referred to the interesting fact that Bouchard had established the virtue of anti-toxic serum for infections with the bacillus pyocyaneus even before the serum treatment of diphtheria was inaugurated. On account of the rarity of the cases and the difficulty of recognition there has been no demand for such a serum and, for the present, cases of pyocyaneus infection even if recognized must be treated simply on general principles. Should these infections, however, prove to be common, and to be easily recognizable during life, doubtless the serum will be provided.

RELATION OF THE ALLOXURIC BODIES TO GOUT OR A URIC ACID DIATHESIS.

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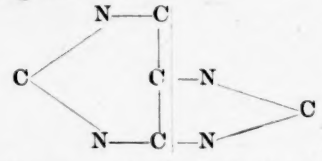
BY T. B. FUTCHER, M.B.

ASSOCIATE IN MEDICINE, JOHNS HOPKINS UNIVERSITY, AND ASSISTANT RESIDENT PHYSICIAN, JOHNS HOPKINS HOSPITAL.

BALTIMORE, MD.

In the German contributions on the studies of metabolism in various diseases which have appeared since 1895, one meets very frequently with the terms "alloxurkörper" or alloxuric bodies, and "alloxurbasen" or alloxuric bases. Especially is this the case in the study of the metabolism of gout. A brief explanation of the circumstances leading to the adoption of these terms may be of interest.

In 1869 Miescher isolated a phosphorus-containing substance from the nuclei of pus cells to which Hoppe-Seyler gave the name nuclein. Previous to this date, xanthin and hypoxanthin had been known to chemists, but it was not until some time later that Kossel demonstrated that yeast nuclein could be made to yield phosphoric acid, hypoxanthin and an albuminous body, by the action of boiling water. Since then, hypoxanthin has been definitely proven to be derived from the nuclein of animal cells as well. In addition to hypoxanthin, four other proteid substances have been derived from nuclein, viz., xanthin, adenin, guanin and cystosin. Closely allied in constitution to these substances, but as yet not traced in their origin to nuclein, are carnin, paraxanthin, heteroxanthin, episarkin, epiguanin, derived from animal tissues, and theobromin, theophyllin and coffein, derived from vegetable structures. Whether all these will eventually be shown to be nuclein derivatives as well, remains to be seen, but as yet only the five above-named substances, viz., xanthin, hypoxanthin, adenin, guanin and cystosin have been shown to be such. Previous to 1895 all these substances were included under the common name of xanthin bases, while the five definitely known to be derived from nuclein were frequently designated as the nuclein bases. Through the researches of Kossel, Horbaczewski and Fischer, it has been shown that uric acid, as well as the xanthin bases, is also a specific product of the nuclein derived from the disintegrated nuclei throughout the body. Fischer, and Kossel with his pupils, have shown that uric acid and the various xanthin bases all have a very similar chemical constitution. Each is made up of an alloxan and a urea nucleus according to the following scheme:



where the group to the left of the vertical line represents the alloxan nucleus and that to the right the urea nucleus, and as a result of this discovery, Kossel and Krüger designated them collectively as "alloxurkörper" or alloxuric bodies, and the xanthin bases as the "alloxurbasen" or alloxuric bases. So that when one speaks of the alloxuric bodies eliminated in the urine, for instance, one has reference to the combined amount of uric acid and xanthin or alloxuric bases excreted.

The close relationship between uric acid and the xanthin bases and the fact that both are derived from nuclein, is shown in the experiments of Horbaczewski. This observer found that by adding some oxidizing substance, as fresh blood, to spleen pulp or spleen nuclein, and then warming for several hours at 45 degrees C., he could obtain considerable quantities of uric acid, while on the other hand, if no oxidizing agent be added and only heat applied, he was not able to obtain any uric acid, but could obtain a corresponding amount of xanthin bases as indicated by the nitrogen contained in them. Horbaczewski believed, then, that nuclein gave rise to either uric acid or xanthin bases according as conditions favorable to oxidation were present or not. The formulæ for the various xanthin bases show that they are simply less highly oxidized substances than uric acid.

The derivation of uric acid and the xanthin bases from nuclein may be illustrated in the following manner:

Nuclein { Albumin. / Nucleinic acid { Phosphoric acid. / Mother substance { Alloxuric, or xanthin, or nuclein bases. / Uric acid.

The quantity of alloxuric bodies eliminated in the urine is believed by many to be an accurate criterion of the amount of nuclein destruction going on in the body. Horbaczewski advanced the theory some years ago that uric acid is formed chiefly from the destruction of the leucocytes, and he believed that a great part of the nuclein produced in the body was due to leucocyte destruction. He found, that whenever there was a leucocytosis, there was almost invariably an increased elimination of uric acid. Thus, in leukemia the uric acid is always and often enormously increased. During the period of digestion leucocytosis more uric acid is eliminated than at other times of the day, and in infants, where there is a quite marked physiologic leucocytosis, relatively greater quantities of uric acid are eliminated than in adults. Although some have raised objections to this theory, there appears to be a general concensus of opinion that the uric acid

excretion is at least influenced by the number of leucocytes present in the blood. These observations suggest strongly, that at least one of the members comprising the alloxuric bodies, namely, the uric acid is rather intimately connected with the nuclein-containing constituents of the blood.

Since the publication by Krüger and Wulff[1] of their excellent method of estimating the alloxuric bodies in the urine, the study of metabolism in gout and other diseases has been much more satisfactory. The method depends upon the fact that uric acid and the xanthin bases are completely precipitated as insoluble suboxid of copper compounds by the action of copper sulphate and sodium bisulphid. The method is briefly as follows: 100 c.c. of urine, free from albumin, are brought to the boiling point and then 10 c.c. of a 13 per cent. copper sulphate solution and the same amount of a 50 per cent. sodium bisulphid solution are added by means of a pipette. The urine is again boiled until the precipitate becomes a greenish-black color, when 5 c.c. of a 10 per cent. solution of barium chlorid are added to facilitate precipitation. It is then allowed to stand for two hours and the precipitate filtered off on nitrogen-free filter paper. The precipitate is washed four or five times with water that has been boiled and cooled to 60 degrees C. The nitrogen present in the precipitate is determined in the usual way according to the method of Kjeldahl. This nitrogen represents the total amount of nitrogen contained in the alloxuric bodies, that is, the uric acid and xanthin bases nitrogen. Having made a separate determination of the uric acid, the nitrogen of the uric acid is calculated by simply taking one-third of the total weight of the uric acid found. The nitrogen of the xanthin bases is then determined by subtracting the uric acid nitrogen from the total alloxuric body nitrogen. If one determines the total nitrogen ingested in the food and the total nitrogen eliminated in the urine and feces, one can by means of the Krüger and Wullf method carefully study the metabolism of nitrogen in the organism.

The following table, giving the average amount of alloxuric body nitrogen eliminated in the twenty-four hours, as found by different observers in healthy persons, shows that the quantity varies normally between rather wide limits.

Kolisch gives 0.260 gram; Bazinsky, 0.250 gram; Krüger, 0.281 gram; Richter, 0.380 gram; Magnus-Levy, 0.506 gram; Weintraud, 0.470 gram; Laquer, 0.45 gram; Umber, 0.3 gram; Futcher, 0.499 and 0.551 gram.

Laquer found that one healthy individual eliminated only 0.2794 gram, while another healthy individual excreted 0.9417 gram of alloxuric body nitrogen in the twenty-four hours. By far the greatest part of the alloxuric body nitrogen is made up of the nitrogen of the uric acid. Krüger gives 0.2814 gram of nitrogen as the normal average amount of total alloxuric body; 0.0481 gram as the normal for the xanthin bases nitrogen, and 0.2333 gram the normal uric acid nitrogen. Krüger and Wullf give 0.0481 gram as the normal amount of xanthin bases nitrogen for the twenty-four hours. The proportion of xanthin bases nitrogen to uric acid nitrogen varies according to these observers between 1 to 2.1 to 1 to 7.6 for healthy persons. Krüger's average in nineteen analyses was 1 to 3.82. Laquer, on the other hand, gives the remarkable variations of 1 to 0.06 to 1 to 332.3 for healthy persons.

It is not the intention in this paper to enumerate or discuss all the various theories that have been advanced relating to the etiology of gout. Some of the more recent views regarding this subject, however, will be briefly referred to.

In 1894 Neusser[2] described a peculiar granulation about the nuclei of the leucocytes in various conditions, the symptoms of which he believed to be due to a uratic diathesis. He called these granules "perinuclear basophilic granules." He demonstrated them by staining cover-slip specimens of dried blood with a modified Ehrlich's triacid mixture in which the basic constituent was relatively increased. He found them most numerous in the mononuclear leucocytes, both large and small, of the blood of patients whom he believed to be suffering from a uratic diathesis, although they were present in smaller numbers not only in the polymorphonuclear but also in the eosinophilic leucocytes. With this modified Ehrlich's mixture the granules took an intense black stain, selecting the basic ingredient of the mixture. They varied considerably in size and were always situated over or about the periphery of the nucleus, in direct contact with it, and never free in the protoplasm of the cell. They gave him the impression that they constituted some substance which had been squeezed out of the nucleus of the leucocyte. Neusser believed that these granules indicated an increased production of nuclein or its derivatives by the nuclei of the leucocytes, and suggested that they were probably of the nature of a nucleo-globulin in composition. The diseases in which he found these granules to be present in the blood, included not only true gout but also affections which he classified under the heading of "irregular gout," as muscular rheumatism, nervous asthma, skin affections, gastro-intestinal derangements, diabetes, leukemia, neuralgia and neurasthenia, in which he believed a uratic diathesis played a part. In many of these conditions he found that a leucocytosis was also present. Uric acid determinations were made in a large number of these cases and an increased elimination found, varying between 0.8 and 1.5 gram for the twenty-four hours. An increased proportion of uric acid to urea was also present, the ratio varying between 1 to 30 to 1 to 20, 1 to 50 being normal. Horbaczewski had previously advanced his theory that uric acid was formed largely from the destruction of the leucocytes of the blood. Neusser, having found that his cases showed an increased elimination of uric acid in association with the presence of the perinuclear basophilic granules, believed that the latter were responsible for this increased excretion. He further believed that his discovery of these granules was of importance from a diagnostic standpoint. For, in suspected cases of gout or in cases with obscure symptoms as muscular or neuralgic pains, he claimed it could be determined by a simple blood examination, whether a gouty diathesis were present or not.

It had been observed by French and other physicians that patients with gout rarely suffered from tuberculosis, the belief being that the gouty poison prevented the development of the latter. Neusser found in examining the blood of tuberculous patients, that those patients in which the disease ran a rapid course showed either an entire absence of the granules or their presence in exceedingly small numbers. On the other hand, cases of fibroid phthisis and those where there appeared to be a limitation of the diseased process in the lung by the formation of fibrous tissues showed large numbers of these granules in the leu-

cocytes. He accordingly believed that the more favorable course of this last type of cases of tuberculosis was due to a coexistent uratic diathesis as indicated by the presence of the granules. Neusser held that if the examination of the blood of a tuberculous patient revealed an abundance of the basophilic granules, a more favorable prognosis could be given than if they were absent, as he claimed the pulmonary lesions in these cases were more apt to undergo fibroid changes.

Kolisch,[3] a pupil of Neusser, advanced a new theory regarding the etiology of gout. He believes that the kidneys not only have the function of excreting but also that of forming uric acid. Kolisch holds that the graver manifestations of gout only make their appearance when the functions of the kidney become impaired from any cause. In his studies on metabolism in gout, he finds that the total alloxuric bodies are increased in the urine. This increase is due to an increase in the amount of alloxuric or xanthin bases and not to an increase in the uric acid, which he in reality finds diminished. In nephritis, Kolisch found that although the total alloxuric bodies were eliminated in normal amount, yet the xanthin bases were markedly increased at the expense of the uric acid excreted. When the kidneys are healthy, the greater part of the alloxuric bodies is eliminated as uric acid but when diseased Kolisch holds that the uric acid becomes diminished and the xanthin bases increased. This leads him to believe that the kidney normally produces uric acid. He demonstrated the toxic effects of the xanthin bases on the kidneys by injecting rabbits and guinea pigs subcutaneously with hypoxanthin, for periods of one to two months. Definite parenchymatous degeneration was in this way produced. Having shown that the xanthin bases were also increased in gout, he believes that these bases are concerned in the production of the kidney affection which precedes the development of the disease. The observations of Kolisch on the urine, in nephritis have not received universal support, and Zuelzer found that there was no diminution in the uric acid excreted and that the proportion of uric acid to xanthin bases is normal. That the xanthin bases produce toxic effects is strongly suggested by the observations of Rachford[4] who found a marked increase in the excretion of paraxanthin in migraine and epileptic attacks. Kolisch believes that many of the symptoms of gout are due to the increased amount of the xanthin bases in the circulating blood. He claims to have found that cases showing numerous perinuclear basophilic granules in the leucocytes always eliminated an increased amount of alloxuric bodies in the urine. Further, he believes with Neusser, that these granules indicate a uratic or gouty diathesis. However, he claims that they give rise to an increase in the xanthin bases, producing an increase in the total amount of alloxuric bodies eliminated, and not to an increase in the uric acid excretion as Neusser held.

Since Neusser's publication I have examined the blood of a large number of individuals, both healthy and diseased, for these perinuclear basophilic granules. In every case I have been able to demonstrate their presence. Further, the blood of many of the healthy individuals examined, and in whom there was not the slightest reason to suppose that the person was suffering from a uratic dyscrasia, showed the granules as abundantly as did any case of gout with typical joint lesions and tophi. I have not been able to confirm the views of Neusser with regard to the relation of the granules in the various types of tuberculosis. They have been found in just as large numbers in patients in which the disease ran a rapid and fatal course, as in those where the pulmonary changes were more chronic and tended to fibroid contraction. In the latter cases Neusser claimed to have found the granules most abundant, and believed they indicated a more favorable course of the disease.

While working under Prof. Kraus in Graz during the previous summer, I had the opportunity of determining the amount of alloxuric bodies eliminated daily in a number of cases, in all of which these granules were present, but being more abundant in some than in others. The analyses were made, in each case, for a series of days in succession, and daily examinations of the blood were made, the same technique being followed from day to day. The result of this work, which has already been published, showed that there seemed to be no constant relationship between the relative abundance of the granules and the total quantity of alloxuric bodies excreted in the urine Cases in which the granules were very abundant showed either a diminished, a normal or increased amount of alloxuric bodies, while on the other hand the granules may be scanty and the alloxuric bodies excreted in the urine increased. There seems, then, to be no definite association between the relative abundance of the granules in the leucocytes and the quantity of alloxuric bodies excreted in the urine as Kolisch claimed there was. It appears very doubtful whether there is any association whatever between these so-called perinuclear basophilic granules and true gout or uratic diathesis.

This view of the formation of uric acid in the kidneys was also held previous to 1847. The discovery in that year of uric acid in the blood of gouty patients, by Sir Alfred Garrod, led to the view that uric acid was formed in certain other organs and tissues of the body and was merely excreted by the kidney. From experimental evidence Sir Alfred Garrod[5] has since concluded that uric acid is normally formed in the kidneys and that when it appears in the blood it results from its reabsorption after having been formed in these organs. Latham also is of the opinion that the final formation of uric acid takes place in the kidneys, where it is produced by the union of substances formed in the liver and conveyed by the blood to the kidneys. Luff, in the Gulstonian Lectures on the Pathology and Chemistry of Gout for 1897, claims that uric acid under normal conditions is produced only in the kidneys. Whereas opinions differ considerably as to the amount of uric acid eliminated in the urine in gout, the evidence seems to favor the view that during the intervals between the acute arthritic attacks and in chronic gout it is at least not increased above the normal. A good many hold that it is considerably diminished but that the daily elimination may reach normal or beyond normal during and just after an acute attack. The most recent work seems to favor the view that there is a distinct diminution in the uric acid excretion, especially in chronic gout. Kolisch, as already intimated, believes that there is a marked diminution in the uric acid excretion with a very great increase in the xanthin bases, making a total increase in the alloxuric bodies eliminated. It is to the increased xanthin bases that he attributes many of the toxic symptoms of gout. His views have received some confirmation by Weintraud who also found the

alloxuric bodies increased during the acute attacks of gout. Schmoll,[5] on the other hand, failed to find the increase in a case of gout which he studied.

Recently I have had the opportunity to study the metabolism in two cases of gout, the results of which are given below, and I can for the most part confirm the analyses of Kolisch. In both cases, and especially in case 1, the uric acid was markedly diminished, while both cases showed a remarkable increase in the xanthin bases nitrogen, particularly case 2. In case 1, the alloxuric bodies were not increased beyond normal, but there was, as just stated, a very marked relative increase in the xanthin bases. In case 2, the total alloxuric bodies were increased beyond what is considered the average for the normal individual.

Case 1, emphasizes a feature in the metabolism of gout which was pointed out by Vogel,[6] namely, that in this disease there is a very marked retention of nitrogen in the system greatly in excess of what could be attributed to a retention of uric acid.

In the two cases here reported the nitrogen determinations were made by the Kjeldahl method. The uric acid was estimated according to Hopkin's modification of the Fokker-Salkowski method, and the alloxuric bodies by the Krüger and Wullf method. In both cases, the total nitrogen ingested, as well as the total amount excreted in the urine, was determined, so that it was possible to ascertain how much there was retained in the system or whether there was an actual loss from the nitrogenous tissues.

Case 1.—Gouty arthritis; tophi; chronic intestinal nephritis. H. C., male, shoemaker, aged 44, was admitted to the Johns Hopkins Hospital, in Dr. Osler's service, March 29, 1897. He had been admitted to the hospital on three previous occasions, the first time in December, 1892. While in the hospital, during the first and second admissions, he suffered from acute inflammation of several of the small and large joints. There was nothing on these occasions to suggest gout, so that the diagnosis of acute articular rheumatism was made. On his third admission, in May, 1896, it was quite evident what the nature of the joint affection was. On the helix and antihelix of the left ear were several small tophi varying in size up to a pin's head. There were also two minute tophi on the helix of the right ear. This discovery was positive proof that the patient was suffering from gout and suggested strongly that this had been the nature of his trouble all along.

On the fourth admission, in March of this year, these tophi were not so marked, but on microscopic examination were shown to contain the typical acicular crystals of urate of soda.

There was no family history of gout. He had taken liquor to excess since he was 15 years old. Up to 25 years of age he drank distilled liquors and after that chiefly malted liquors. He had had nephritis since his first admission, when albumin and casts were present in his urine. He had suffered from repeated arthritic attacks during the interval between the various admissions.

The attack for which he was last admitted began on March 25, 1897, with pain and swelling of the metacarpo-phalangeal joint of the right index finger, which afterward spread to involve the other metacarpo-phalangeal and wrist joints. On admission the metacarpo phalangeal and first phalangeal joints were swollen, red and painful and the backs of both hands swollen to a point considerably above the wrists. There was also some swelling and pain of the ankles and knees. The acuteness of the joint trouble had considerably subsided before the analysis began.

A careful study of the metabolism was commenced in this case on April 1, at 6 A.M., from which time on the urine was carefully saved each day. The experiment was divided into two periods. In period 1 the patient was not getting any medicine, while in period 2, 1 gram of hexamethyltetramin (urotropin) was given every four hours to see whether there was any increase in the uric acid elimination or on the metabolism of nitrogen generally.

The following diet was given daily throughout the experiment:

Breakfast.—Ham, 40 grams; bread, 60 grams; milk, 250 grams.

Dinner.—Ham, 40 grams; bread, 80 grams; milk, 300 grams; rice, 40 grams; sugar, 15 grams.

Supper.—Ham, 40 grams; bread, 60 grams; milk, 250 grams.

This food gave 1,391.35 calories daily or a little over 31 calories per kilogram body weight. These heat units were made up as follows:

Albumin	75.41 grams =	309.17 calories.
Fat	34.69 grams =	321.60 calories.
Carbohydrates. .	185.51 grams =	760.58 calories.
		1,391.35

The feces belonging to the two periods were separated by giving a mixture containing vegetable carbon according to the method described by Von Noorden.

Nitrogen ingested in grams. Period 1.

Date.	Day.	Ham.	Bread.	Milk.	Rice.	Total.
April 1-2.	1	6.5106	3.2316	4.8160	0.5584	15.1166
April 2-3.	2	6.5106	3.2316	4.9760	0.5584	15.2766
April 3-4.	3	6.5106	3.2316	4.9760	0.5584	15.2766
April 4-5.	4	6.5106	3.2316	5.0820	0.5584	15.3726
April 5-6.	5	6.5106	3.2316	4.4540	0.5584	15.7546
		Period 2.				
April 6-7.	6	6.5106	3.2316	4.9600	0.5584	15.2506
April 7-8.	7	6.5106	3.2316	4.7840	0.5584	15.0846
April 8-9.	8	7.7237	3.2316	5.1360	0.5584	16.6497

Period 1.* No Medicine.

Date.	Day.	Body weight.	Amount of urine; c.cm.	Acid reaction and sp. gr.	Leucocytes.	Total nitrogen.	Alloxuric body nitrogen.	Uric acid.	Uric acid nitrogen.	Xanthin bases nitrogen.	Xanthin bases nitrogen: uric acid nitrogen.	Remarks.
April 1-2. . .	1	44 kilos, 300 gr.	740	1009	8,500	5.2884	0.1546	0.0355	0.0118	0.1428	1:0.08	Swelling and pain in joints subsiding.
April 2-3. . .	2	43 kilos, 900 gr.	1175	1010	8,000	7.7815	0.1307	0.1375	0.0458	0.2749	1:0.16	
April 3-4. . .	3	43 kilos, 800 gr.	1440	1010	8,000	9.5040	0.1756	0.0864	0.0288	0.1468	1:0.19	
April 4-5. . .	4	43 kilos, 900 gr.	1450	1010	6,000	9.1930	0.4219	0.0374	0.0124	0.3845	1:0.09	Joints free from pain and swelling.
April 5-6. . .	5	43 kilos, 600 gr.	1300	1010	9,000	7.8260	0.2856	0.1027	0.0342	0.2492	1:0.13	
				Period 2. Hexamethyltetramin, gram 1, every four hours.								
April 6-7. . .	6	43 kilos, 600 gr.	1080	1013	10,000	7.2792	0.3142	0.1296	0.0432	0.2710	1:0.15	
April 7-8. . .	7	43 kilos, 600 gr.	1230	1011	8,000	7.6011	0.4145	0.0984	0.0328	0.3817	1:0.08	
April 8-9. . .	8	43 kilos, 600 gr.	1710	1010	5,000	9.9622	0.3813	0.1710	0.0570	0.3243	1:0.17	

Krüger gives as the average amount of nitrogen in the alloxuric bodies, uric acid and xanthin bases 0.2814, 0.2333 and 0.0481 grams respectively for the normal individual. A comparison of the above table with these averages shows the marked variations, particularly in the uric acid and xanthin bases nitrogen.

* The amounts are in cubic centimeters and grams. The urine contained between 0.1 and 0.2 per cent. of albumin and a few hyaline and finely granular casts.

Nitrogen—balance table in grams. Period 1.

Date.	Day.	Nitrogen ingested.	Nitrogen eliminated.			Balance. Nitrogen ingested —nitrogen eliminated.
			In urine.	In feces.	Total.	
April 1–2.	1	15.1166	5.2984	0.9042	6.2026	+8.9140
April 2–3.	2	15.2766	7.7315	0.9042	8.6357	+6.6409
April 3–4.	3	15.2766	9.5040	0.9042	10.4082	+4.8684
April 4–5.	4	15.3726	9.1930	0.9042	10.0972	+5.2754
April 5–6.	5	14.7546	7.8260	0.9042	8.7302	+6.0244
Period 2.						
April 6–7.	6	15.2506	7.2792	0.6164	7.8956	+6.3550
April 7–8.	7	15.0846	7.6014	0.6164	8.2178	+6.8668
April 8–9.	8	16.6497	9.9522	0.6164	10.5686	+6.0811

One of the striking features in this case is the immense amount of nitrogen retained in the system, being almost one-half of the total amount ingested during the period. The amount of uric acid was extremely small throughout. The total alloxuric bodies were not increased. The relation of the xanthin bases nitrogen, to uric acid nitrogen, was markedly increased. As will be seen from the table, the former was always markedly in excess of the latter, whereas the normal proportion, according to Krüger, should be 1 to 3.82. There was eliminated, not only an absolute but also a relative increase of the xanthin bases, and in this respect the case agrees with the findings of Kolisch in his cases of gout. Neusser's granules were very abundant throughout period 1, but as will be seen from the table the total alloxuric bodies were not increased as Kolisch believes they should be.

The only appreciable effect of the urotropin was a slight increase of the alloxuric bodies but no appreciable increase in the uric acid. Neusser's granules were distinctly diminished during this period. There was less nitrogen eliminated in the feces during period 2 than in period 1.

Case 2.—Gouty arthritis; no tophi; mild interstitial nephritis. R. B., male, aged 46, tinner by trade, was admitted to the Johns Hopkins Hospital in Dr. Osler's service, on April 27, 1897, complaining of attacks of severe pain and swelling of the joints. There was no history of gout or rheumatism in the family. States that he had diabetes when 35 years of age, for which he received hospital treatment. For years he had been a heavy eater and drinker. No history of plumbism. His first attack of arthritis was in 1861, when the ankles and feet were painful, red and swollen. Since then he has had repeated attacks of arthritis, the ankle and knee joints being oftenest affected. Both great toe joints have been involved on several occasions. During the last two years the attacks have been more frequent, having had thirteen attacks during this period. On admission, there was considerable swelling and some edema over the dorsum of the right foot extending above the ankle joint. Considerable pain was complained of. The right knee joint was also slightly swollen. There was some thickening about the great toe joint on both sides. No tophi were found. Patient had embryocardia on admission, which disappeared in a few days. No cardiac murmur was to be heard. The urine contained less than .1 per cent. of albumin and a few small hyaline casts. The metabolism was studied in the same way as in Case 1. The patient was given a special diet, the food being accurately weighed out each day.

The accompanying tables give the results of the analyses:

This case showed on the whole a considerable increase in the total alloxuric bodies eliminated. The uric acid was diminished, while the xanthin bases nitrogen were increased to a very marked degree. In fact, I know of no records in which the nitrogen representing the xanthin bases were increased to the same extent. The quantity for the first day of the experiment, 0.7321 grams, seems incredible, yet the two determinations of the uric acid and alloxuric bodies corresponded very closely, the average of the two being used in the calculation. There was a gradual diminution in the amount of uric acid eliminated as the joints improved. On the last day there was a slight rise. The total nitrogen eliminated in the urine daily varied considerably in this case, and this has been observed in gout by others. There was also considerable daily variations in the nitrogen balance. On the first and last days there was a greater excretion than intake of nitrogen, while in the other three days there was a retention in the system.

The perinuclear basophilic granules were fairly abundant in this case, but not so numerous as in Case 1. On the other hand, the alloxuric bodies were much higher in the second than in the first case, again showing that there does not appear to be any constant relationship between the two.

Apart from this point, however, the cases rather go to confirm Kolisch's view that in gout there is a diminution in the uric acid and an increase in the xanthin bases elimination.

Nitrogen—balance table.

Date.	Day.	Nitrogen ingested.	Nitrogen eliminated. In urine.	Nitrogen eliminated. In feces.	Nitrogen eliminated. Total.	Balance. Nitrogen ingested —nitrogen eliminated.
April 28–29.	1	14.2889	14.8200	1.3856	16.2056	—1.9217
April 29–30.	2	17.6788	12.3486	1.3856	13.7342	+3.9446
April 30–May 1.	3	17.9772	16.4864	1.3856	17.8720	+0.1052
May 1–2.	4	17.7792	10.8180	1.3856	12.2036	+5.5756
May 2–3.	5	18.0772	18.9882	1.3866	10.3738	—2.2966

Nitrogen ingested—in grams.

Date.	Day.	Ham.	Bread.	Milk.	Total.
April 28–29.	1	4.4759	3.4700	6.3400	14.2889
April 29–30.	2	6.5388	4.7600	6.3800	17.6788
April 30–May 1.	3	5.9652	5.7120	6.3000	17.9772
May 1–2.	4	5.9652	5.4740	6.3400	17.7792
May 2–3.	5	5.9652	5.7120	6.4000	18.0772

Table of Urinary Analyses.

Date.	Day.	Body weight.	Amount of urine.	Acid reaction and spec. gr.	Leucocytes.	Total nitrogen.	Alloxuric body nitrogen.	Uric acid.	Uric acid nitrogen.	Xanthin bases nitrogen.	Xanthin bases nitrogen : uric acid nitrogen.	Remarks.
April 28–29.	1	90 kilos, 900 gr.	1860	1017	17,000	14.8200	0.9172	0.5553	0.1851	0.7321	1:0.25	Right knee and ankle joints still painful and swollen.
April 29–30.	2	89 kilos, 300 gr.	1400	1014	14,000	13.3486	0.3276	0.4074	0.1358	0.1918	1:0.70	Joints improving with rest.
April 30–May 1.	3	88 kilos, 900 gr.	1610	1014	15,000	13.4864	0.6649	0.3944	0.1314	0.5335	1:0.24	. . . . .
May 1–2.	4	88 kilos, 100 gr.	900	1016	11,000	10.8180	0.6453	0.2088	0.0696	0.6757	1:0.12	Joints much better.
May 2–3.	5	88 kilos, 600 gr.	1720	1016	14,500	18.9882	0.4886	0.3474	0.1158	0.3228	1:0.35	Practically no pain or swelling in the joints.

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THE OCULAR EXPRESSIONS OF GOUT.

Presented in the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY CHARLES A. OLIVER, A.M., M.D.

ONE OF THE ATTENDING SURGEONS TO WILLS' EYE HOSPITAL; ONE OF THE OPHTHALMIC SURGEONS TO THE PHILADELPHIA HOSPITAL, ETC.

PHILADELPHIA, PA.

When it is remembered that the visual bulb has within its structures a numerous network of blood vessels, and when it is understood that the eyeball is nothing more than a lymph-holding end organ which is constantly changing the greater part of its fluid constituents, it can be realized that in these structures there can appear all of the irritation and inflammatory changes that may be produced by either an undue amount of urates in the system, or the existence of uric acid and other abnormal products in the adjacent parts.

The presence of material in the outer coats of the eye, that is so similar to that found in any joint-tissue, and the close relationship that the bulbus itself in the orbit, bears to every ball-and-socket joint, both show how the external coverings of the organ, its encompassing capsules, and its attached muscles with their delicate sheaths can be seriously disturbed by fluid-change, inflammatory exudate, and inorganic deposit, as the result of a gouty diathesis.

The accessories too, so abundant in gland, vessel, lymph-channel, cartilage and periosteum, furnish an abundant soil for toxic reaction, abnormal accretion, and arthritic change. Nor do the associated nerves escape. Here the evil accompaniments of pressure, invasion, inflammation and degeneration, all exhibit themselves in many types of the disorder.

Take for example the lids, the conjunctiva, the lachrymal apparatus and the orbital contents. How characteristic are the swollen, tumid and angry lids, so excruciatingly painful at times, and so seldom, if ever, ulcerated! The inflammatory condition so rapid on onset, so barometric in character, and so quickly subsiding by the application of dry heat and the employment of constitutional measures, makes a symptomatic grouping that once seen is seldom, if ever, forgotten. The fleeting forms of conjunctival inflammation with slight or no excretion, the sensation of the presence of foreign body, the dense and not infrequent edema of the sub-mucous tissue, and the intense intolerance to light, must all be noted as expressions of the general disorder, and not believed to be entirely the consequences of colonization of localized bacteria. Lithiasis conjunctivæ or calcified infarcta occurring in the course of the Meibomian glands, are frequently seen in middle-aged and elderly subjects, and especially in men, as evidence of similar changes to be found elsewhere. At first causing no disturbance, but later, by perforation and exposure, producing all manner of irritative lesions by mechanical action, they may produce that most dangerous complication, desquamation of the corneal epithelium, with the usual train of infectious sequelæ. Keratitis, by some stated, peculiarly band-like in character, interstitial at times, and rarely, if ever, ulcerous in form, has been spoken of by a number of competent authorities.

Inflammation of the sclera both in the fibrous intima and in its overlying capsular and tendinous material, evidences, particularly in the male subject, an intimate relation to the general condition by a series of extremely fugitive signs that are in many cases pathognomonic. Circumscribed when superficial, it is not rarely associated with such intense dread of light and such sharp and frequently recurring attacks of lancinating pain, amidst copious gushes of hot tears, that the condition of the sufferer becomes truly pitiable. As suddenly disappearing by the local use of heat with pilocarpin at times, and the internal administration of large doses of alkalies, the comfort obtained is ofttimes phenomenal and truly appreciated.

So too with the deeper structures of the eyeball. The iris with its ciliary and choroidal prolongations may suffer intensely. Frequently sharp, excessively painful, devoid of much gross alteration, and at times provoked by accidental and operative traumatism, the anterior segment of the uveal tract becomes a treacherous ground for more deeply seated and more disastrous future outbreaks. More often the inflammation, which may be either plastic or serous in type, especially the latter, is marked and insidious. At times it is hereditary, with vitreous complications. As a rule it is associated with the general exacerbations and is untypical in form, and although, probably in many cases, especially in the serous variety, it is coextensive with some more deeply seated inflammatory change, there is very little by which it can be separated etiologically from any other similar form of inflammatory reaction.

The local treatment in both of these types of disorder (always employing heat for the relief of pain), is dependent upon the coëxistent condition of the organ, taking care if any permanent success be hoped for, to resort to active and properly applied systemic measures.

Should the middle or the posterior thirds of the uveal tract be involved; that is, should the ciliary body with its contained muscles, and the choroid be inflamed, which fortunately is not so frequently the case, the diagnosis becomes less easy, the evil consequences are greater, and the treatment is less availing. It is probable that in this peculiar type of disorder, the existence of most of the forms of lenticular change and some of the varieties of glaucomatic process must be sought for.

Where the retina and optic nerve are concerned, the ophthalmoscopic picture becomes in many cases quite typical. Rapidly recurrent fine feathery hemorrhages with more deeply seated ones located throughout the retina and atonic broadening and flattening of the retinal veins and arteries, associated at times with some of the signs of incipient glaucoma, often appear early in the history of the case. Later, in the more chronic forms, inflammatory vessel-wall change, with shrinkage, atheroma and sclerosis, first manifesting itself in the veins and subsequently in the arteries, may be found. The easily recognized edema of the retina with its usual venous accompaniments generally confined to the posterior pole of the eye, followed by insidious though progressive inflammatory reaction extending both anteriorly by contiguity into the vitreous and the lens, and posteriorly into the choroid are now superadded. These, with the at times, peculiar glistening yellowish bodies found aggregated more particularly in the superficial layers

of the circum-macular region, may be considered as almost pathognomonic. Often low grades of neuritis which seemingly extend some distance back into the nerve-substance can be recognized, these ordinarily appearing monolaterally and generally found in middle aged subjects.

As a rule, uncontemporaneously binocular, generally first appearing in the visual field, and associated with defective vision; the retinal and optic nerve-groupings are not difficult of recognition. Prognosis is never good and incomplete blindness is almost certain.

From this clinical study, it will be seen, as before hinted, that the eyeball, with its accessories, is peculiarly prone to disturbance during the course of general disease; in fact, the organ in its every detail of structure, is liable to changes that are dependent upon gout.

GASTRO-INTESTINAL AND HEPATIC RELATIONS OF GOUT.

Presented in the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY CHARLES G. STOCKTON, M.D.

Professor of the Principles and Practice of Medicine and Clinical Medicine, Medical Department, University of Buffalo; Attending Physician to the Buffalo General Hospital.

BUFFALO, N. Y.

Murchison and Sir Dyce Duckworth, among other students of the subject, have associated the excessive formation of uric acid and the development of gouty attacks with disturbances of the liver. Under the name of lithemia or latent gout, Murchinson described a set of symptoms very commonly met with in this country; among the conspicuous symptoms is the appearance of uric acid, urates and calcium oxalate crystals in the urine in abnormal amount.

These cases of lithemia show evidence of disturbed primary digestion, congestion of the liver, headache, lassitude, malaise, but rarely evidences of deposits, arthritic or otherwise, that are characteristic of true gout.

The question has been raised, and I think justly, is lithemia gout or is it the expression of a toxemia resulting from habitual disorder of the digestive organs including the liver? Before answering the question it may be well to turn to some later views regarding the relation of uric acid to gout, and the origin of uric acid in general.

It would appear to have been conclusively shown by Sir Alfred Garrod, Sir William Roberts, and later by Arthur P. Luff in his recent Goulstonian lectures, first, that "uric acid is not normally present in the blood of man or other mammals nor in the blood of birds; second, that uric acid is normally produced in the kidneys only, and is formed from urea, probably by the conjunction of that substance with the glycocin in the kidneys."

Since the glycocin has its origin in the liver, we can readily understand how hepatic disorder might lead to disturbances in the amount and quality of the glycocin formed. We may therefore understand how hepatic diseases, either with or without gout, may be competent to derange urinary secretions. So it will be seen that an excess of uric acid in the urine does not necessarily mean a gouty diathesis. In fact, it has been shown by Pfeiffer that the uric acid output, instead of being increased in gout, is in point of fact diminished, and the kidneys seem to have lost in part their power of elimination; and although we find in the blood of the gouty individual uric acid in the form of quadurates, and also find the deposits in the joints and other parts not in the form of uric acid, but in that of the biurate of soda, this takes place not because there is uric acid in the blood, but because of some reason that we do not yet understand.

This proposition, namely, that gouty deposits do not follow merely because there is uric acid in the blood, may be proven by the fact that in leukemia, and several other affections in which there is rapid growth and destruction of leucocytes, there is formed a relatively enormous amount of uric acid from nucleinic acid, and yet in these cases we find none of the ordinary symptoms of gout, no deposits of the biurate of soda in the tissues, but we do find the uric acid passing from the body, partly unchanged and partly in the form of urea.

It will thus be seen, 1, that gout does not depend upon the continued presence of the excess of uric acid in the blood; 2, that the formation of uric acid in the kidneys is disturbed in case of gout, probably as a result of some disorder of the liver; 3, that disorders of the liver unaccompanied by gout are capable of deranging the normal uric acid output.

Let us now return to the question already propounded. Is lithemia gout, or is it the expression of a toxemia resulting from habitual disorder of the digestive organs, including the liver? From experience gained in the study of functional disorders of the stomach the conclusion has been forced upon me that the great majority of instances of so-called lithemia are in fact cases of toxemia, in no true sense gouty in nature. As there are many causes of functional disturbance in digestion, so there are many causes of lithemia. It is readily admitted that gout is the occasional cause of the disorder of primary digestion, but the proportion of cases in which it is shown as an actual probability is extremely small.

Perhaps the full import of this position will be more clearly shown when it is pointed out that permanent relief of the condition does not follow the treatment directed toward gout, but that it does follow the right ordering of diet and the right management of the disturbed digestion in other ways. Undoubtedly it is true that digestive diseases aggravate gout, and I think that Luff has shown why it is that indiscretion in diet, particularly as regards certain kinds of food, are capable of exciting paroxysms of gout in gouty subjects. I have carefully and repeatedly studied the stomach contents in a few cases of gout, and find that quite uniformly there occur periods of marked hyperchlorhydria with delayed starch digestion and flatulence, followed by enlargement of the liver, which conditions, if not relieved, are likely to be succeeded by characteristic arthritic attacks.

At other times such indiscretions in gouty subjects excite paroxysms of gastralgia or angina pectoris, the latter usually accompanied by high arterial tension, and sometimes by the discharge of a large amount of pale-colored urine. Again, an acute eczema makes its appearance. I have found that the hyperchlorhydria occurring in the gouty is very intractable to treatment, and those remedies (acting through the nervous system) that generally prove useful in hyperchlorhydria depending upon reflex nervous causes, in gouty patients are of little value. Large and repeated doses of alkalies and potassium iodid give the best result.

Now, such patients may not observe a strict dietary

and may habitually lead sedentary lives. Such indiscretions may provoke attacks of auto-intoxication closely resembling those attacks seen in the non-gouty, yet it can not be too strongly insisted upon that gout is not the most common, but is rather an infrequent cause of such attacks of toxemia. In other words, it is shown that the condition in the gouty patient is distinct and requires a different management from the condition in the non-gouty. This brings us to the consideration of diet in the two classes of cases in question.

To those who have had the widest opportunity for studying gout there is a remarkable uniformity in the belief that all forms of proteids, particularly the dark meats, are objectionable in the paroxysms, and that a diet rich in such substance is likely to precipitate an onset of gout. Fruit juices and the fermented liquors are especially objectionable; on the other hand, farinaceous foods are well borne. In the case of the non-gouty lithemic, albuminoid foods are often the most suitable. Such a patient will find relief from a diet of lean beef, and will suffer if the starchy foods are taken in considerable quantity. It must be acknowledged that individual cases require individual diet and management, and to assume that all cases in which gout is not a factor, will do best upon a nitrogenous diet, is to make a careless generalization.

The careful study of the stomach contents and the adjusting of the diet according to the knowledge thus obtained, together with the frequent examination of the urine, meantime noting the increase or decrease of the body weight, the muscular activity, the state of the nervous system and the feelings of the patient, should be our guides in reaching a knowledge of the correct dietary. It may be set down as a rule that in all cases of lithemia, whether gouty or non-gouty, the fermented liquors and fruit juices are objectionable and sometimes act as a real poison.

An active life out-of-doors has a most beneficial effect on all cases, and this has been used as an argument to prove the identity of lithemia and gout. A little thought will suffice to answer this argument, for it will be remembered that such habits of life are most favorable for good digestion and proper behavior of the stomach, intestine and liver. This rule applies not only to lithemia, but to all digestive disorders.

These remarks are intended to prepare the way for the following conclusions: 1. That gout is a definite disease to which certain individuals are predisposed, but which depends for its development upon causes largely unknown. 1. Laziness and full nitrogenous diet and the use of fermented liquors predispose to the disease. 3. So-called lithemia, as the term is popularly applied, is not gout, but is an auto-intoxication depending upon gastro-intestinal and hepatic derangements. 4. The diet in gout should be largely free from nitrogenous substances. 5. The diet in lithemia must be ascertained by a careful study of the primary digestion, the urine and the general health of the patient, but a nitrogenous diet is often the most satisfactory one.

TREATMENT OF GOUT.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY H. C. WOOD, M.D.

PHILADELPHIA.

I am expected to epitomize in fifteen minutes the wisdom of the ages with regard to the most frequent of all conditions, probably, of the better class of the human race. I want in the first place, however, to clearly develop before you what I myself believe, that all our scientific knowledge of gout at the present amounts to little more than a mass of trundling expectation upon which hereafter shall be built some true knowledge. And I think that in the successful treatment of gout the understanding of this is the basis. There are three great manifestations of the same thing which is universally allied to itself. We have rheumatoid arthritis as one type; we have podagra or true gout, as the second type; and we have acute articular rheumatism as a third type. Let me give you just one illustration from family history, that of my own case, which represents the family history of all the better families in this city which have endured here for generations: A great grandfather leaving his descendants the results of high drinking and living in England, a few dollars and much gout, the one disappearing, the other continuing; a second generation whose history I do not know much of; a third generation, nearly the whole of which dying of gouty degeneration of the cerebral arteries or heart; a fourth generation, some of them developing attack after attack of acute rheumatism, half a dozen, eight, nine or ten in the life history of a single individual; one of them having true podagra; all of them plagued with the various manifestations that we know as nervous gout. There is a relation between these things, not the same thing, but they have the same basis, and this basis absolutely eludes our grasp scientifically.

Now, when we come to treat gout, if we purge ourselves of the false idea which we think we possess, we can recognize the importance of this great principle, not to attempt to treat gout at all, but attempt to treat the individual who comes before us. Let me take simply the question of diet. You know that we inherited from Sydenham the belief that gout was made worse by red meats and that they should not be used. I have seen gouty patients in whom a single piece of ordinary red roast beef would precipitate a furious attack. I have also seen many gouty patients who would not get well until they were put upon red meat. What is the diet for gout? There is no diet for gout. It is diet for the individual. I have seen gouty patients who, if they took starch or sugars, went right down; and I have seen gouty patients who had to take starch and sugars to be built up. Therefore the first principle in the diet of gout is to adapt it to the individual before us. You judge of the case by the effects of experiment. In a large majority of cases sugars and starches have to be cut off. In spare gouty patients starches often do good; farinacious diet may be essential. You have to order your diet according to the individual. A milk diet is one which probably suits the large majority of patients. But that which suits the individual, the stomach, the digestion, will suit the gout or kill the gout.

When we come to the treatment of gout by exercise we find the one thing which does more good than anything else in almost every case, provided we direct the right amount of exercise. If we try to put into an ounce bottle, three gallons of exercise, we crack the bottle. Massage is a form of exercise, and it may be all that your patient can endure; fifteen feet of walking may bring on weariness or it may require some Alpine height. The same story, study your case. Begin with the slightest amount of exercise, but do not let

up. Be inexorable. Keep it within the point of causing exhaustion, and each day do an ounce more if necessary. That is the whole secret of exercise in gouty patients Begin with a small measure and gradually increase the amount, and you will find it does more good than any drug. The bicycle is the great calisthenic of the world.

With regard to drugs, there are a great many people who tell you that salicylates do no good. Men do not get good out of salicylates because they do not use them properly. I do not believe that salicylates cure gout or rheumatism, any more than that bromids cure epilepsy. They simply aid in keeping down the diathesis. If there be any cure. it is exercise. If you use your salicylates on a case properly, and get no response, you have something more than ordinary gout or rheumatism to deal with. There are certain cases which approach typical gout such as we rarely see in America, in which colchicum does good, much more good than salicylates. I have seen two cases of typical English gout corresponding to Sydenham's description, and only two. We do not have it in this country. Those cases colchicum suits better than salcylates do. Sometimes, when the cases is on the border line, you will get the best results by a combination of colchicum with salicylates. If you have a strong robust man, he will stand it. Give him knock-down doses in addition to purging him and you will bring him through. But that treatment may be worse than the disease, and has to be used with caution.

In using salicylates the profession almost universally choose the worst salt they can find, and that is the sodium salicylate. It is, perhaps, not so bad as salicylic acid, but it is much more apt to turn the stomach, and is less effective and more depressing than the other salts of salicylic acid. The two salts which are truly useful are the ammonium salt and the strontium salt. The ammonium salt acts immmediately and severely; the strontium salt acts slowly. If you have an acute case, use salicylate of strontium, or use the two combined. The strontium salt has this advantage, that it does not derange digestion anything like the other preparations, and many a time have I seen the best effects on the intestinal condition from the use of the strontium salt.

In a large majority of cases you will find that salicylates produce depression, and perhaps a little nausea, general wretchedness, and the patient refuses them. Nine times out of ten you can overcome those effects by combining your salicylate with digitalis and strychnin in the same prescription.

As to baths, you can not cure a diathesis by baths. It can not be done. But baths are useful, hot baths, steam baths, Turkish baths. Any man who values his own life, who has had a gouty grandfather, ought to take a Turkish bath once a week. You can not wash out ancestral traces in any other way. The kidney disease and the atheroma will be far less rife if we use the hot bath more than we do. The baths eliminate, give a temporary result, and are very useful when employed with the understanding that they do not cure the disease but relieve the symptoms.

A word about the Tallman-Sheffield apparatus or dry heat, which I have had a good deal of experience with this year. For about three months I had a large clientele using it all day long. In the first place, it is absurd to suppose that this is going to cure the gouty diathesis any more than that any other application will. In the second place it is my experience that it has very little value in the rheumatoid arthritis. In the third place, it is of very little value in chronic inflammations, even of purely gouty character, in joints. But I had my office crowded with people seeking relief, and it is empty today and that is the best criterion of the result. If the results claimed for the treatment were obtainable, I could soon fill this hall with patients, for they all want relief, but every missionary I sent out converted the people to the wrong faith. On the other hand, when you have deposits in the tendons and outside the joints; when you have traumatic synovitis, whether in baseball men or other persons, the results of this apparatus seem almost marvelous. I have seen a pitcher's hand drawn up and disabled for three or four years, the condition pronounced by a distinguished physician as gout, treated by the dry heat method, and after three or four treatments the hand had become pliable and the use of it came back. So, in acute strains and tendinous inflammations, this dry heat is of great value. In subacute rheumatism it is of value through its sweating and local influence. It has to be used at high temperatures. I carried it up to 330 degrees F. You can scorch the lint wrapped around the limb without scorching the limb. It has no value at all, acording to my experience, in old cases of rheumatoid arthritis, and very little use in rheumatism of the joints.

GASTROPTOSIS.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY CHARLES D. AARON, M.D.

INSTRUCTOR IN MATERIA MEDICA IN THE DETROIT COLLEGE OF MEDICINE. DETROIT, MICH.

There is a dislocation of the stomach with which the physician in general practice meets quite frequently. It is usually associated with dislocation of sections of the intestine and other organs within the abdominal cavity. Gastroptosis, a term for which we are indebted to Glénard, is that condition in which the greater curvature of the stomach lies permanently below the navel, and therefore outside of its normal position. This condition is more or less connected with the descent of the intestines and other abdominal organs termed enteroptosis. It is believed that the dislocation of the right kidney, called nephroptosis, plays a great rôle in the symptom-complex of enteroptosis, inasmuch as nephroptosis is always joined with enteroptosis. The fact is, the stomach may reach lower than normal in the abdominal cavity simply because the abdominal walls become flaccid and the ligaments which support the viscera relax. Abrams[1] reported a case of gastroptosis with voluntary oscillation of the stomach. While in certain cases gastroptosis is accounted for by a kind of predisposition due to heredity or acquired by the force of various conditions, it may be maintained that the majority of cases is accounted for by incidental causes. It may be due to excessive emaciation, exhausting diseases, loss of blood, frequent births, pressure of garments and pendulous abdomen. Every experienced practitioner is aware of the sad fact that tight lacing is to be charged with many of these pathologic conditions. Before we speak of these, I wish to say that certain neurasthenic or hysteric disturbances characteristic of ailments of the uterus and its appendages are also present in dislocations of the abdominal organs.

That the ligaments and mesenteries become relaxed is probably due most frequently to the weight of the abdominal organs, but Glénard cites amongst other causes of gastroptosis also those diseases of a gastric or intestinal origin which lead to a state of auto-intoxication and produce a weakening and exhaustion of both walls and ligaments. Another account made as to the etiology of gastroptosis is suggested by Fleiner.[2] It refers to the special relations occupied by the several organs packed into the abdominal cavity and accounts for the abnormal forms and positions as results of adjustment to given conditions. This alteration is especially significant in the upper section of the abdominal cavity, in which, as is well known, the stomach, liver, spleen and part of both colon flexures are situated. Fleiner cites the case of pleural exudative affections in which the organs lying below the diaphragm do not find sufficient room in the hypochondrium, and are therefore constrained to project themselves out of it. It is here where the lacing habit has its widest explanation. I may call attention to a third theory, that of Meinert,[3] who has brought the phenomenon of gastroptosis into etiologic relation with chlorosis. While it is true that anemia is often coincident with gastroptosis, the probability is that the latter is the cause of the former. Chemic and microscopic analysis of the stomach contents has no value for the diagnosis of gastroptosis. All departures from the normal condition of the gastric juice may take place as they usually do and the motility of the stomach may be completely maintained.

It is also possible that the symptoms of gastroptosis may remain latent, while again insignificant incidents may produce functional disturbances due to a formerly unobserved displacement of the organ. The fact is that as in many other conditions, so also in this, the patient calls for assistance only when the disease has entered into an aggravated stage and has become plainly manifest. In all previous phases of the difficulty the patient seems to complain of light disturbances of digestion alone. But all the while the stomach and intestinal tract are in constant danger of effective disturbance. Independent of digestion and of the quality of the foods, the symptoms range from variable appetite to rabid hunger and loss of appetite, through almost every kind of irregularity. Abnormal sensations, such as are usual in abdominal disorders, set in. Pressure, fulness, hot burning sensations, belching, nausea and even vomiting may occur. These symptoms may be reduced by avoiding every kind of excitement by means of complete rest of both body and mind. Sometimes these disorders may simulate the whole series of gastric diseases. Epigastric pulsation, which is frequently present, is not only unpleasant to the patient but worries him very much and appears to him as a pulsating tumor. Constipation, which is a characteristic symptom of gastroptosis and which sometimes leads to intestinal catarrh, is always present. Nervous symptoms are quite common, and manifest themselves in the form of abnormal sensations in the stomach and back which often amount to severe attacks of pain. This backache is quite typical and never absent. The plexus of nerves connected with the dislocated organ may be the mediate cause of these phenomena, which may be produced by the occasional tuggings on them in the attempts to bend, and in quick movements.

The diagnosis of gastroptosis is usually made by locating the size, boundaries and position of the stomach. For this purpose the usual methods are resorted to, viz., artificially distending the stomach with air or carbonic acid gas, by percussion after a quantity of water has been introduced and by passing a ray of light to illuminate the organ. Auscultatory percussion has recently received new help from the phonendoscope, which seems to become a somewhat popular method for marking out the organs of the abdominal cavity. While this method may be of material assistance when the introduction of the tube into the stomach is contraindicated, it seems to me that the results obtained do not always have an undoubted value. Manges[4] says that he has been disappointed in auscultatory percussion of some of the organs. The successive tapping produces changes in the tone which are very confusing. He finds that it is necessary to employ vigorous strokes in order to get percussive reaction for deeply situated organs, such as the kidneys, spleen, etc., and he sums up the record of the phonendoscope by stating that the expectations raised by Bianchi are not entirely realized. It would seem that the phonendoscope would be of greatest use in the examination of the abdominal organs and that it would help substantially to outline the stomach. It is stated that its advantages lie in its simplicity and the relative rapidity with which satisfactory results are obtained. Sound reaction, however, will in the very nature of the case hardly be able to compete with reaction by light.

For the best means for mapping out the stomach we are indebted to Einhorn,[5] who in 1889 succeeded in introducing an electric light into the stomach so that it became transparent through the anterior abdominal wall. It became possible by means of this method, which now passes under the name of gastrodiaphany, to determine the position and size of the organ, as well as its relation to neighboring normal or abnormal processes. By the force of extended experiments he could afford to make the assertion in 1892,[6] that we can safely diagnosticate gastroptosis by means of transillumination. The fact that we are able to recognize the upper border of the stomach in cases of gastroptosis enables us by transillumination to recognize the low position of the stomach. It must be remembered that the stomach when sunk has lost more or less its area of contact with the diaphragm, and it is on this account that the area of illumination, as Kuttner and Jacobson[7] have proved, shows no respiratory displacement. In cases of gastroptosis the organ has sunk with all its upper parts *in toto*, even with the cardia, small curvature and pylorus. On this account the anterior wall will be illuminated more or less, because a larger part of the stomach lies close to the anterior wall of the abdomen. Boas[8] says that just as in cases of gastroptosis transillumination furnishes characteristic data, for in many instances it enables us to determine the position of the upper border of the stomach.

The treatment of gastroptosis is mechanical, dietetic and medicinal. Treves,[9] however, reports a case of gastroptosis in which recovery was accomplished by abdominal section. The main purpose of the mechanical treatment is to support the dislocated stomach and along with it such abdominal organs as are abnormally movable at the same time, and to maintain them in their normal position as much as possible. This is usually accomplished by means of certain bandages. These should be constructed out of stiff material and should fit accurately. Their efficiency consists in a

pressure from below forward, upward and backward. I have modified the Ewald-Kuttner hypogastric supporter in such a manner as to prevent its gliding upward as most of the ordinary bandages do. A truss band fitting the body below the crest of the ilium and above the trochanter is connected with this supporter so that the pad of the latter lies just above the symphysis pubis. When tightened, the combination gives the desired pressure. Where this supporter (drawings of which I exhibit herewith) has been applied the patients seem to be relieved. It should be put on in the lying posture and be removed at night. In cases of gastroptosis where the symptoms are not relieved by the bandage, we may safely assume that the supporter does not fit or that it has been applied incorrectly. The bandage, upon proper application, exerts a pressure upon the hypogastrium from below upward, raises the intestines and invigorates the tension of the abdomen.

Every pressure upon the upper abdominal region should be avoided, and for this purpose sanitary garments are to be recommended. In cases where the abdominal walls have become flaccid and the muscles of the stomach need corresponding strengthening, their contractility can be promoted by the cold douche, faradization and abdominal massage. For the reposition of the internal organs the horizontal position is the most naturally helpful. In all difficult cases, therefore, prolonged bed rest is advisable.

In the *Muenchener Medicinische Wochenschrift*,[10] an interesting method of treatment for enteroptosis is given by Günzburg. A small quantity of baker's yeast is prescribed, the size of a bean; the fermentation provoked by the yeast is reported to cause a degree of flatulence which holds and immobilizes the intestines and thus allows the stomach to revert to its normal position. Should the flatulence prove to be too great and provoke a feeling of distension, the quantity of yeast can be diminished. It is reported that this treatment gives the patient a sensation of comfort, produced by the action of the carbonic acid upon the intestine, this carbonic acid being developed in the digestive tract under the influence of yeast. The stools become more regular and abundant. The distension of the intestine carries the aorta away from the abdominal wall so that the patient does not feel the beating of this vessel. (I report this ingenious method, but I have had no experience with it.)

The nourishment prescribed in gastroptosis should be ample and nutritive. Caution should be observed on this account that the gastric difficulties of the patient have no relation to any affections of the mucous membrane of the stomach which may be present. For the treatment of the constipation incident to gastroptosis, fresh fruit and graham bread are to be employed. The medicinal treatment should be directed to the phenomenon of constipation alone, and should embrace the usual laxatives and alkaline salts. Boas[11] recommends strychnin, bismuth salicylate and resorcin.

[1] Abrams: Medical News, April 18, 1895.
[2] Fleiner: Krankheiten der Verdauungsorgane, 1. Haelfte, p. 209.
[3] Meinert: Ueber Enteroptose; Sonderabdruck aus dem Jahres bericht der Gesellschaft fuer Natur und Heilkunde zu Dresden, 1891, 1892.
[4] Manges: New York Medical Journal, Jan. 9, 1897.
[5] Einhorn: New York medicinische Monatsschrift, November, 1889.
[6] Einhorn: Ueber Gastrodiaphanie; Berl. klin. Wochenschr., 1892, No. 51.
[7] Kuttner and Jacobson: Sonderabdruck aus der Berliner klin. Wochenschr., 1893, No. 39.
[8] Boas: Diagnostik und Therapie der Magenkrankheiten, Leipzig, 1893, Georg Thieme, p. 87.
[9] Treves: British Medical Journal, Jan. 4, 1896
[10] Muenchener Medicinische Wochenschrift, July 7, 1896.
[11] Boas: Diagnostik und Therapie der Magenkrankheiten, Leipzig, 1895, p. 155.

32 Adams Avenue, West.

PERFORATING WOUNDS OF THE EYEBALL.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Ill., Sept. 23, 24 and 25, 1896.

BY D. C. BRYANT, M.D.
OCULIST OF THE UNION PACIFIC RAILWAY.
OMAHA, NEB.

Perforating injuries of the eyeball are quite common among railroad employes and occur in all forms and degrees from the slightest perforation of the cornea with the loss of scarcely a drop of aqueous humor to the complete opening up of the globe and the entire loss of all its contents. Perforating wounds of the eyeball, with few exceptions, should be looked upon as serious injuries and be treated with the care that such cases deserve. Beginning with the wounds in the anterior part of the eyeball a small cut with a clean and sharp instrument through the cornea is not generally a serious injury, unless the agent producing the wound be infected, or penetrates beyond the posterior surface of the cornea far enough to injure the iris, lens or deeper structure of the eye. But if this cut should be situated within the pupillary space, the injury would be a serious one, not on account of the danger to the integrity of the eyeball, but because the resultant scar would interfere with the vision of the injured organ. If the opening should be sufficiently large, prolapse of the iris is almost certain to occur, followed by the dangers of infection, iritis, or deeper seated inflammations. If the agent producing the injury be rough or dirty, infection is liable to be carried into the corneal wound or into the anterior chamber, setting up a suppurative inflammation which may cause loss of a part or whole of the cornea, rendering the eye useless as an organ of vision for all time to come. Wounds extending deeper injure the iris or the lens or both. With the injury of the lens another danger is added to the case. As a rule as soon as the lens or its capsule is injured it immediately begins to swell and usually causes enough irritation to set up an iritis or cyclitis. The younger the patient the less the danger of these results occurring, as in children an injured lens with proper management will often break down, disintegrate, and be absorbed without causing any serious trouble. But railroad employes are not often below the period of adult life and an injured lens in these cases is a serious matter and is capable of doing damage in a number of ways, unless properly managed, as the opacity of the lens resulting from the injury causes loss of all useful vision until the lens itself is removed either by absorption or operative measures; the swelling of the lens substance causes iritis, or cyclitis, which may result in the destruction of the eye as a visual organ, or the swelling by increasing the intraocular tension may cause a traumatic glaucoma with the bad results following non-traumatic cases of this disease. Should a wound penetrating the anterior wall of the eyeball extend beyond the lens into the vitreous there will be in addition to the trouble already mentioned, danger of hemorrhage into, and infection of the vitreous, both of which conditions as a rule eventually cause the loss of vision, and oftentimes the latter causes destruction of the eyeball itself. The wound may not

be received in the anterior wall but back in the ciliary region, or still farther back through almost any portion of the sclera, although Nature has placed the eyeball so that the posterior half is well protected from external injuries. The results following injuries in these locations will depend upon the size and depth of the wound and on the fact as to whether the instrument producing the injury was aseptic or not. If the wound is large there may be loss of the entire vitreous and lens which means loss of the eye; if the wound is small and clean cut there may be very little damage done, no loss of vitreous, almost immediate union of a wound, and no bad results. Between these two extremes will occur cases of many different degrees of seriousness. As a rule the deeper the wound the more serious it is, not only on account of the mechanical injury done, but also the liability of carrying infection to the deeper structures. But whatever portion of the eyeball is penetrated by these injuries there is another factor, not yet mentioned, which adds an extra amount of gravity to any given case, and that is the retention, within the eyeball, of the agent causing the wound. It is true that a number of cases have been reported where eyes containing foreign bodies have retained more or less perfect vision, but these cases are in a hopeless minority, are considered so rare that they are always reported, and only serve to emphasize the danger which becomes manifest sooner or later in the greater majority of these cases. In all cases of penetrating wounds of the eyeball followed by inflammation of the deeper structures there will be more or less danger of sympathetic trouble in the other eye. The retention of a foreign body within the eyeball increases this danger. With this hurried discription of these injuries, let us pass on to the "diagnosis of penetrating wounds of the eye," which is the part especially assigned to this paper in the present discussion.

Many of the severer cases could not be overlooked with the most casual examination, the wound being so large and gaping, the lips separated by fragments of iris, lens or vitreous. There are others, however, where the wound is so small or so clean cut as to make it absolutely necessary to exercise the greatest care and caution in making the examination in order to avoid a mistake in diagnosis, and in these the following mode of making examinations will be found very useful and satisfactory.

First, the history which the patient will give of the manner in which the injury was received, the kind of agent producing the injury, shape, size, material, force, and direction from which it came, and portion of eye struck, will give one some very valuable information in regard to the case. Thus the exact point of injury is often located by the patient which might be overlooked by the examiner unassisted by the patient's description. The size and shape of the foreign body, the material of which it is composed, and the velocity and force with which it was sent will be of great importance in deciding the depth to which the wound has extended. A description of the instrument inflicting the injury often decides whether or not there is a foreign body retained in the eyeball, a very important point indeed to be decided early; as, if the instrument is a penknife, a pin, needle, or pair of scissors, an examination of the article, finding it intact, shuts out the possibility of anything being retained within the eye. On the other hand, should the agent producing the injury be a small bit of iron, steel, brass or copper, the chances are that if not caught in the cornea, or sclera, it has passed through and lodged in some of the deeper structures of the eye and the most thorough and painstaking examination should be instituted in order to discover and locate it if this be possible. It is always best to use a biconvex lens of two inches focus in making these examinations. By using the condensing lens for oblique illumination, small punctures which otherwise would be overlooked will be brought distinctly into view. In addition to this another convex lens can be used as a magnifying glass to enlarge images and will be another adjunct in making this discovery of the slightest wound more sure and certain. The examination should begin with the cornea, which being a bloodless membrane leaves little trace of small wounds or punctures and on this account the use of the magnifying glass and oblique illumination are almost indispensible. A faint dot or line of opacity usually tells the story of injury to, and perhaps an opening through the cornea. If the wound has penetrated deeper and the iris be injured, blood in the anterior chamber and perhaps a rent in the iris itself, adds to the evidence already collected. If the point of penetration is beyond the margin of the cornea in the sclera, even the most minute puncture usually leaves a dot of blood from the conjunctiva or subconjunctival tissue to mark the point of entrance. Blood in the anterior chamber may be the result of a penetrating or non-penetrating wound and should not be taken as conclusive evidence of the former unless the cut in the anterior wall of the eyeball can be discovered. A blow on the eyeball may cause a laceration of the iris filling the anterior chamber with blood and even dislocate the lens, without perforating the anterior wall. If the wound is in the cornea and is seen soon after the receipt of the injury the anterior chamber will be found very shallow or almost obliterated, the iris being pushed forward against the posterior surface of the cornea, the loss of the aqueous humor allowing the lens to push the iris forward. This, when present after an injury, is a positive symptom of perforation but in many cases, where the opening is small and clean cut, the wound almost immediately closes and in a few moments sufficient aqueous humor reaccumulates to refill the anterior and posterior chambers and this valuable diagnostic symptom disappears. Where the wound is larger a prolapse of the iris into the wound is positive evidence of an opening through the anterior wall. If the perforation is at or back of the ciliary region there will be prolapse of the ciliary body or choroid instead of the iris. In the larger wounds there may be not only prolapse of iris or choroid but also escape of lens, or vitreous or both. Wherever the wound is located, as long as it remains open, a valuable symptom will be present in the shape of diminished intraocular tension. This symptom is especially valuable in cases where small wounds through the sclera are hidden by bruised and swollen conjunctiva. Laceration of the sclera from a blow on the eye will present this symptom. After the first twenty-four hours an opaque lens will often establish the fact that the eye has been penetrated and the lens injured. Cases occur when the penetrating body is very small (as bits of metal, steel, iron, brass, etc.) where the most skilled eye surgeon will be in doubt for a short time, as to whether the foreign body has passed in and remains in the eye or not. Immediate search of the anterior part of the eye with convex lens and oblique illumination and of the

deeper parts with the ophthalmoscope may not reveal the foreign body or the path it has pursued, but after a short time symptoms in the shape of opacities in lens or vitreous, or inflammations of the deep structures of the eye with corresponding loss of vision will remove any doubts that may have at first existed. Briefly, then, a correct diagnosis immediately (within a few hours) after receipt of injury can usually be reached in the more obscure cases by obtaining a careful history of the accident from the patient; by close examination of exterior surface of eyeball with convex leus and oblique illumination, by noting the depth of anterior chamber, by testing the tension of eyeball, by noting prolapse of iris or any portion of uveal tract, and last, if the media be clear, the ophthalmoscope may locate a foreign body or reveal a wound in the deeper structures of the eye. Later on swelling and opacities of the lens or vitreous and inflammatory trouble out of proportion to what would be expected from the visible wound, often point out the extreme depth of the injury, or the presence of a foreign body which before may or may not have been suspected. Detachment of retina with loss of vision months after the receipt of a small wound in the sclera may be the first positive proof of the penetrating nature of the injury. The short time alloted this paper does not allow any extended description of the management and treatment of these injuries, but as the final result depends so much on the treatment received the first few days after receipt of injury, I can not refrain from adding a few lines in regard to the early management of those cases which do not require immediate enucleation.

As there is no way of determining whether a wound is aseptic or not these cases should all be treated as septic and palpebral sac be thoroughly cleansed with an antiseptic solution and any foreign substance in the sac carefully removed. Loose ends or fragments of cornea should be trimmed off and lips of wound brought in as nice apposition as possible. Any foreign body retained in corneal wound or in interior of eye should immediately be removed if possible with forceps or magnet, though no rude probing or exploring after unseen or unlocated foreign bodies should be indulged in. If the iris protrude through the wound and is uninjured, after being thoroughly cleansed, it should be carefully replaced in anterior chamber with probe or spatula. If this can not be done or if the iris be lacerated the protruding portion should be removed. If the wound be in or near the central portion of cornea, sulphate of atropia in two to four grain solution should be used with sufficient frequency to secure wide dilatation of pupil within a few hours time so as to remove the iris from the location of the wound and thus avoid further danger of prolapse. If the opening is near the periphery of the cornea a solution of eserin or pilocarpin should be used to prevent the iris from bulging into or through the wound After the first twenty-four hours, or as soon as the edges of the wound are adhered the myotic should be changed to mydriatic. A bandage of gauze over a light pad of cotton should be applied for support of lacerated wall and to prevent friction of wound from movement of lids. This also shuts out the danger of further infection of wound from the atmosphere, practically making a closed wound. Cold applications are indicated in all of these cases, except the very mildest and are best applied over the light dressing already described. Experience has taught me that as good results are obtained with less discomfort to the patient by the use of a small ice bag over the pad and bandage as by the use of cold in any other manner. This can be used more or less constantly according to severity of case, and obviates the necessity of the constant attendance of a nurse, which is absolutely necessary with the application in the usual way. Pain should be relieved and rest and sleep secured by the use of morphia, if necessary, as these conditions are as essential here, for the prevention of inflammation and the hastening of the reparative process, as in wounds in other portions of the body. If the wound be through the sclera and is of any considerable size, the edges should be brought together with sutures as this membrane, on account of its stiffness and inelasticity, does not allow the opening to close so that union between the lips of the wound can take place.

By following the above rules many of the milder cases, in a very few days, will be practically well, while the severer ones will be placed in the best condition possible for the prolonged and varied treatment which they will require, a description of which would occupy more time and space than is allowed this paper.

DISCUSSION.

Dr. W. A. WARD—I am not much of an oculist and have not had much experience, but it has fallen to my lot to have four cases of penetrating wounds of the eyeball. The first was one in which a piece of steel was lodged in the cornea and was readily removed but subsequently was followed by protrusion of the iris, the protruding part was removed but the iris became blocked in the cicatrix that follows, and remains in that condition today, although the eyeball is intact and is full size. The second case was one in which one-half of the washer of a rivet as a boiler-maker was clipping it off flew into the eye; the eyeball immediately filled with blood. An effort was made to remove it with forceps, it was a failure; it was then removed by the electro-magnet. In that case recovery took place, the eye cleared up but we have a dislocation of the lens, and of course impaired vision. The third case was one almost similar arising in the same way as the second. An effort to remove by the forceps, and a failure, and the electro-magnet succeeding, but the recovery was protracted; after two months the patient complained of a scratching; I examined and found a second piece and it was removed. That case recovered, but of course with impaired vision. The fourth case was the result of an explosion of the gas tube of the oil feeder on a locomotive, and that lacerated the eye so that all of the interior eye at once exuded, and of course there was no other way than to extirpate the remaining coats of the eye. Taken these two cases, the second and third, in my next case, if I should be unfortunate enough to have another, I would not delve, especially if the eyeball filled with blood, but would use the electro-magnet at once, and then I would make free use of the boracic acid solution.

Dr. BRYANT—I can not help saying something, these cases are very important cases, and the most important part of it to my idea is the early treatment as far as the railroad surgeon is concerned. The surgeon does not intend to treat these cases through, excepting the milder cases, but he must have charge for the first twenty-four hours, perhaps for two or three days. In my own practice I see most of these cases about the third or fourth day and some of them have not been treated at all, and in those cases so much damage has already taken place by inflammatory trouble that the results are not as good as if they had been properly treated—nothing done excepting the eye has been cleansed. If the surgeon would use the free application of cold continuously these cases would come into our hands as if we had seen them first; except in cases where the foreign body is retained in the eye, which perhaps we might remove better than the general surgeon. But even those cases can be treated by the surgeon when the foreign body is in the anterior chamber; I do not know as a rule that the surgeons have a magnet, but if the ordinary surgeon would carry either an electro-magnet or a small magnet which is strong enough to remove small bodies from the eye and occupies no

space in a case, you will find you can remove most of these bodies without any trouble—in most cases the original wound is closed and we have to reopen it or make another wound, but the use of the cold and the moist dressing should always be begun immediately after the first dressing of the wound and continued for the first few days at least.

THE PERSONAL EQUATION AMONG TRAINMEN OF EQUAL OR GREATER IMPORTANCE THAN VISUAL POWER OR COLOR SENSE.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Sept. 23, 24 and 25, 1896.

BY ROBERT TILLEY, M.D.
CHICAGO.

After having one day examined a few locomotive engineers for visual power and the color sense in particular, I felt considerably dissatisfied and asked myself the question, what is the object of these examinations? The answer came immediately: To avoid accidents by the elimination of men with visual defects. Another question presented itself: But is this—the condition of the color sense and the visual power relative to form—all that can afford us information relative to the aptitude of the individual to perceive quickly and respond with judgment? Emphatically, no. There is another phenomenon, or rather several phenomena, the observation of which would add much greater certainty to our work and more personal satisfaction in its contemplation. These several phenomena consist of the time taken for the sensation to be carried from the retina through the optic nerve to the cortical substance of the brain; the time taken for comparison and ratiocination; the giving order for action and the execution of action.

The whole of these several operations takes but a very short time; but it is only a very short time, a small fraction of a second that determines an accident or an escape from the same. This fraction of time and its importance has been recognized by astronomers ever since serious calculations by different individuals have been made, and has been called the "personal equation," and it is only by taking notice of this fraction of time that their calculations can be made to agree. I have little doubt, gentlemen, that you will recall instances of marked rapidity of action and marked slowness of action, the latter being by far the most readily noted. I have been told of a case where the length of time taken up by the phenomena referred to above was so great that it was unsafe for the individual to venture out alone. There is no danger of such extreme cases being found among trainmen.

Now the exhibition of the instrument by which it is proposed to measure this personal equation is of very much greater importance than any collection of words attempting to discuss the matter. Consequently I am extremely sorry that it has been impossible to get the instrument here to exhibit to you. But all of you know the numerous unforeseen circumstances which arise in any original work. I know Mr. Bush of Rochester, who is making it, tried his level best to get it here.

The instrument at present is in appearance like an old clock, only about one-half or two-thirds the height. Accompanying it on a table is a small case supplied with keys corresponding to the red, green or white objects which will be made visible at will by the examiner. This small case is witnin easy reach of the person being examined. In the large case near the top is a hole, across which is made to pass an object, white, green or red. The man being examined is requested to observe and touch the correspondingly colored key on the instrument on the table; and the time that elapses from the moment the object passes the hole in the large instrument to the time when the key is touched is the man's personal equation, which is shown by a line which is begun at the moment the object passes the large hole and is stopped at the pressure of the key. The length of this line is easily transformed into the fraction of a second. If a mistake is made by touching a green key when a red color appeared, or *vice versa*, that is recorded.

That is a very crude description of the external appearance of the device. The inward working, the instrument not being here, is omitted.

An instrument like this means a good deal of preliminary work before it is easily and readily applied. The average personal equation will have to be ascertained and may become a recognized item like the visual acuity. When the instrument is thoroughly mastered it will be a practical and useful instrument.

I am disposed to think that it will detect and show up a class of cases which not infrequeutly applies for personal damage without any real claim. I am interested in one such now on hand.

In 1892 I was asked to examine a man relative to his visual acuity. He claimed to have suffered a loss of vision in connection with a wound in the forehead. The report was that there was incipient atrophy—that in all probability it had nothing whatever to do with the accident—but that with the claim that vision was perfectly good beforehand and no proof to the contrary it would be very difficult to demonstrate to a jury that it was not caused by the accident.

There was a settlement made and now as he is blind, he brings suit again, claiming that he did not know what he was doing.

Now it is not at all unlikely that this is a form of atrophy associated with locomotive ataxia and that as the perception of sensation is often retarded in such cases, it is very probable that the claimant being examined by some such device as this within twelve months prior to the accident, he would have been relieved of his duties and the accident prevented.

DISCUSSION.

Dr. D. C. BRYANT—I believe it is important to examine all these cases, not only in regard to color vision, but also as to the quickness with which they can perceive colors, and even more than that, the errors of refraction. On our own road within the last few years we have turned off a great many of the old engineers on account of the errors in refraction. In our own case we have been using something with which we can get at the quickness of the recognition of colors by which the employes could be tested. We have an electric light and flashing colors, which is much better than the old way of testing with colors and better than the permanent light—often a quick perception of colors prevents a smash-up. This has been employed for several years. One fault I find with the company, they do not have their men examined often enough and not enough of the men examined; the brakemen, conductors, engineers and firemen should all be examined, not only as to colors, but as to quickness in perceiving colors. With our own road nobody is obliged to be examined excepting the engineer; this is really an injury to the firemen as they spend from three to four years firing and then on being examined for engineers they are shut out for being color blind or on account of errors of refraction; whereas if they had been examined they would have spent their time in some other and perhaps higher position.

PENETRATING WOUNDS OF THE EYEBALL.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Sept. 23, 24 and 25, 1896.

BY T. J. REDELINGS, M.D.

SURGEON TO THE CHICAGO AND NORTHWESTERN RAILWAY, MARINETTE, WIS.

The title assigned to this paper is so comprehensive in its scope, that I do not presume to touch upon all the phases which it might present, but will endeavor to emphasize such points as present themselves to my mind with especial force after a careful review of the available literature on the subject. It may be that I shall speak of some things common place and trite to many, but I do it without apology for the reason that the eye is so commonly misunderstood and consigned to the recuperative powers of nature. In injuries of the eyeball as in injuries of other parts of the body, much depends upon the first dressing the wound receives. The principles of aseptic and antiseptic surgery should be carefully followed in all their minor details. Wounds of the eyeball are so varied in their nature, that we shall consider them under separate headings.

1. Wounds of the cornea. By far the greater number of every surgeon's traumatic eye cases are injuries to the cornea by the presence of a foreign body. The indications in these cases are very clear. The eye should first be cleansed with a saturated boric acid solution, then cocainized and the foreign body removed by a spud or neeedle, with a minimum amount of injury to the cornea. If the injury is slight a weak antiseptic collyria dropped into the eye for a day or two and wearing of smoked glasses will be all that is required. If more extensive a compress and bandage, the application of heat or cold, whichever is more acceptable to the patient, with the use of eserin or atropin will add to the patient's comfort. If the offending agent enters the eye while hot my experience has taught me that it is quite as important to remove the brownish char as it is to remove the particle of iron, steel or emery which caused it. I have frequently seen very unpleasant sequelæ where this was omitted, and desire especially to emphasize this little precaution.

When the projectile is lodged in the cornea but penetrates the anterior chamber it can be removed by the keratotome or curved needle. If it falls into the anterior chamber it should be removed at once by an iridectomy; should it fail to escape with the aqueous it will be easily removed with the iris forceps.

Wounds of the cornea show a tendency to heal kindly. This has been conclusively demonstrated by the many operations which are made in it to reach the interior of the eye. Wounds accidentally inflicted are, however, not always clean cut and their edges not easily kept in perfect apposition. Asepsis and apposition are the two principal points upon which primary union in wounds of the cornea depends. These simpler wounds of the cornea carefully treated usually heal without a visible scar.

2. Injuries of the cornea involving the iris and lens. "Penetrating or incised wounds of the cornea are very generally followed by prolapse of the iris. The extent of the protrusion varies with the size and position of the wound. A small penetrating wound near the corneal margin is more likely to be attended with prolapse than a larger incised one near the center. The amount of prolapse to a certain extent is dependent on the size of the wound; but beyond one of a limited range, such as is produced by the point of a pair of scissors or the blade of a penknife, the tendency to prolapse is diminished as the size of the wound is increased.[1]"

Prolapse of the iris always constitutes a formidable complication and usually taxes the surgeon's ingenuity to decide which of the two plans of treatment to pursue, operative or non-operative. The latter we think should always be given a trial. After the wound has been thoroughly cleansed the iris may be replaced with a spud.

A solution of eserin or atropin according to the location of the wound should then be applied to put the iris in a splint as it were. If the iris can not be retained in place by this method, recourse to the method of Gama Ponti can be taken[2]; this surgeon abscises the prolapsed portion of the iris, frees all adhesions to the margin of the ulcer, and covers the opening in the cornea with a flap of bulbar conjunctiva, which should be cut twice as large as the opening and pushed into the orifice with a blunt probe. A firm binocular bandage is applied, and the eye not dressed until the third day. Then it will often be found that the conjunctival flap has healed into the ulcer. A flat non-adherent cicatrix results, or in other words, an ordinary corneal scar without staphylomatous bulging and a circular pupil. Dr. Schweinitz reports several gratifying results by this method.

If the lens or its capsule is injured there will in all probability be developed a traumatic cataract. The point of injury is within twenty-four hours indicated by an opaque patch, which gradually increases until the whole lens becomes opaque. The rapidity of the formation of a cataract will depend partly on the extent of the injury, and partly also on the age of the patient. If the rent is large and the substance of the lens broken into, the aqueous humor will come rapidly in contact with the lens substance and its transparency be quickly destroyed. If the rent is small the development of the cataract will be very much more slow. It occasionally happens, but this must be considered exceptional, that a small wound of the lens capsule produces only a limited opacity. In relation to injuries to the lens Dr. J. Hirschberg of Berlin reports two cases of very especial interest at this point.[3] The one a boy 14 years old, who while exploding a gun cap was struck in the left eye with a portion of the cap, the copper particle being easily visible in the lens, and the opacity being limited to the immediate site of the foreign body. The other a man 46 years old, who while discharging a gun was struck in the right eye by a piece of the gun cap. In the outer layers of a perfectly transparent lens could be seen a copper splinter 5 to 6 mm. in length. Only a light gray cloudiness of the lens capsule immediately over the foreign body was discernible. Of these two cases Dr. Hirschberg says the copper splinter in the lens was well borne for months and years without the development of a disturbing cloudiness; the eye read the finest print, and did not require operation.

Slight injury to the lens or capsule may, however, result in so stormy a swelling of the lens that the safety of the eye demands its immediate removal. This operation usually terminates happily.

3. Injuries to the ciliary region and the sclerotic. "A wound of the cornea even though the lens or iris

[1] Lawson: Injuries to the eye, page 114.
[2] Schweinitz: Ophthalmic Record, June, 1896.
[3] Deutsche Med. Woch., 1894. No. 14.

be implicated, is less fatal to the eye than a similar wound in the sclerotic." The hemorrhage in the former instance, is into the anterior chamber, and mixing with the aqueous humor it is rapidly absorbed; whereas in the latter, if hemorrhage ensues, it is into the vitreous, and frequently also between the choroid and retina. Blood in the vitreous is slowly absorbed, while irreparable damage is done to that portion of the retina which has been displaced by a blood clot. Wounds of the sclerotic sometimes heal with difficulty, and the difficulty increases as the location of the wound recedes from the margin of the cornea. This is probably occasioned by the fact that the margins of the wound remain patulous, the tissues of the sclerotic refusing to yield to the diminished size of the vitreous within it; hence it is that wounds in the sclerotic where only a small quantity of vitreous has escaped, there is a tendency for the lips of the wound not to come together, and a consequent inability for primary union. These wounds, however, unite quickly if the edges are brought in apposition by a fine silk suture. Dr. Bowman reported two cases illustrating this fact. "In the first patient there was a wound in the sclerotic which had remained patulous for three days, and in the second, no attempt at union had taken place one week after the accident, yet, in each case, immediate union followed after the edges had been brought into accurate apposition by a single fine suture." The occasional cystoid cicatrix, which is found, could, we think, be avoided by recourse to suturing. The danger of a wound to the eyeball is immensely increased, if the injury is located in the sclero-corneal region involving the ciliary body. The risk to the injured eye is very great, but the chief danger is the chance of the other eye becoming involved in a sympathetic ophthalmia.

Lastly, we come to consider briefly that class of wounds in which the projectile remains within the eyeball. Every penetrating wound of the globe should be especially examined with reference to the possibility of there being a foreign body within the eye. The history of the case should be carefully gone into with a view to ascertaining the exact nature of the material which struck the eye, whether large or small, by what force and in what direction it was propelled against the eye. The eye itself should be examined first superficially, then the iris and lens. If the wound in the cornea suggests the possibility that a foreign body may have penetrated it, and yet the foreign body is not visible in the iris or lens the pupil should be dilated with atropin to bring the lens into full view, because it may have lodged in the margin of the lens and behind the iris. Oblique illumination is of immeasurable value in this examination of iris and lens. If such an examination does not reveal the foreign body, and the conditions are favorable, a thorough ophthalmoscopic examination of the whole fundus should be made, and the foreign body located if possible. Unfortunately, however, these injuries are sometimes attended by hemorrhage, which entirely obstructs the view of the interior of the eye. Dr. Rohmer[4] in a very able article on "Extraction of Metallic Foreign Bodies from the Posterior Segments of the Eye by the Electro-magnet," says: "When a foreign body reaches the deeper parts of the eye, it will cause disorder varying in intensity and gravity according to its size, the region of its entrance, its degree of cleanliness, its chemical composition, the place which it occupies, and its action on the neighboring parts. After its penetration, the eye may be immediately and irrevocably lost from the extent of the lesion, escape of vitreous, hemorrhage or infection. Or the foreign body entered by a very small opening, and only caused an insignificant lesion, with partial or complete preservation of vision."

The location of a foreign body in the eyeball will in a measure determine the degree of tolerance, the different structures reacting differently to its presence. In the lens, for instance, a small foreign body may be borne well for years, and be ultimately removed with the schriveled and hardened cataract. In the posterior segments, however, a foreign body will rarely be tolerated. In the vitreous, choroid, and ciliary body, even though the foreign body became encapsulated there will sooner or later develop a plastic or purulent inflammation, with consequent destructive ophthalmitis.

The treatment of these cases will depend upon the nature of the foreign body. Coppez made the observation that in seventy cases of foreign body in the posterior hemisphere of the eye, forty-two were iron or steel, ten were lead-shot, ten fragments of cartridges or pieces of copper, six fragments of stone, one zinc, one wood.

If the foreign body is magnetizable it should be removed as soon as possible after the accident with the electro-magnet. From the statistics[5] gathered at the clinic in Zurich by Hirschberg it is apparent that during the four years preceding the use of the electro-magnet in cases of metallic fragments in the vitreous, there were twenty-four cases treated, all of which were recorded as failures, that is, 100 per cent. During four succeeding years in which the electro-magnet with antisepsis were employed, of thirty-five cases there were only twenty-four failures, that is, 68 per cent. In his own practice without the magnet he did not have one successful case, during the first ten years. In the following ten years with a magnet, of thirteen successful cases, seven were noted as satisfactory, and six as mediocre. These figures certainly justify the use of this method, and we need not discuss this proposition at greater length.

If the foreign body is not magnetizable, the eye should be enucleated as soon as there are signs of obstinate inflammation.

[4] Annales d'Oculistique, March, 1896, p. 174.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

IX.—THE ACADEMIE ROYALE DE CHIRURGIE AT PARIS. PIERRE JOSEPH DESAULT.

(*Continued from page 179.*)

Medicine had from the first not kept pace with surgery in France; the latter had always been pursued with partiality, while the former had been neglected, so that, with a few exceptions, French physicians had not made brilliant records. The chief reasons for this failure of medical study were, the too brief period devoted to it, the neglect of the supplementary studies, the selling of the doctor's degree, and above all the separation of medicine from surgery. This had con-

[5] Hirschberg: Centralbl. f. prak. Augenclinik, 1894, p. 281.

tinued in France, as in Germany, since that unfortunate time when the Catholic church forbade the clergy to perform any operation whatever. As a result the science sank to the level of a trade. Indeed, the Italian, Lanfranchi, who in 1295 had fled to Paris, taught both sciences, practiced both, and declared that their separation was an evil; but centuries must pass before the Revolution ushered in a wholesome reform. The political equality of physicians and surgeons, and of the sciences of medicine and surgery, had been established, and must have, as a consequence, the reunion of the two sciences. Suggestions for the improvement of medicine were sent in by different societies. Chaussier showed the absurdity of the separation of medicine and surgery, and exposed the abuse, on the part of the body surgeons, of extorting money and selling appointments (1789). The Royal Society of Physicians also, in an address to the national convention, contended for the inseparability. The propositions which were made agreed with the report or instruction by Talleyrand, one of the best minds which arose out of the Revolution; but the flight and capture of the King diverted the attention of the national convention from the subject of education, and Talleyrand's plan, along with others, was pigeon-holed. The convention met. The leaders of the Reign of Terror were reproached with wishing to banish science and the arts, as they decreed the suppression of the Academy and the societies and caused the persecution and death of certain scholars. The accusation is not entirely just. They abolished those institutions and those learned societies, because they had been privileged and endowed, and now the sentiments would not allow of the existence of any privileged body. They bore upon themselves the stamp of despotism, and their organization conflicted with the principle of equality; therefore they must fall. Lavoisier must die, not because he was a great scholar, but because he had been a tax-levier. Desault's imprisonment was the result of the personal hatred of certain rogues, but his scientific deserts saved him, for he remained under arrest only three days. A physician in Arras was denounced at the instance of his colleagues, and executed because he had a picture of the King in his room. It is also to be remembered, that much of the mutilation of works of art is to be ascribed only to subalterns; Henriot, the commander of the national guard, demanded that all libraries be committed to the flames. But no systematic extirpation of the sciences took place, and even at that time, among other things, the botanical garden in Paris, was considerably enriched. Then followed the strenuous persecution of the monasteries and the clergy; a mass of old parchment-rolls, which perhaps contained valuable manuscripts, was used for cartridges. According to the crude conception of liberty and equality which the mob had, even scholars, because of their prominent position, must be opposed to it; they were treated with distrust. All the destruction wrought resulted in less injury to science than the complete diversion of all forces to the field of politics, the consternation, and the death of many talented men upon the battlefield. All this thrust science to one side. During this time Vicq d'Azyr died, bowed with grief over the horrors of the Revolution. Excepting a law for military hospitals the convention did nothing positive. After the fall of the tyrants, the need of improvement in medicine again appeared in the foreground. Till 1792, when the Revolution abolished public instruction in medicine, the separation of medicine and surgery had been rigorously maintained; when in the year 1794, at the suggestion of Chaussier and Fourcroy, the Ecoles de santé, described in a previous chapter, were founded, *medicine and surgery were again united.* Without doubt the Revolution accomplished this, instruction was essentially improved and practical clinics organized. According to the proposition of the physician and deputy Guillotin, whose name is immortalized in the executioner's ax, all academical degrees and titles should be abolished, and all practitioners should bear the name physician, which was changed in 1794 to officier de santé. In spite of many reforms, the social conditions left much to wish for. One who wished to practice must pay twenty francs a year (though advocates paid nothing), and officiers de santé were classed with furniture dealers, carriage-makers, hair-dressers and others, in the fourth tax-class.

Let us return to the French surgeons. In the first half of the eighteenth century, the scepter of surgery was held by *Jean Louis Petit* (1674–1750), before whom all contemporaries must bow. Even as a boy he studied anatomy under Littre, who lived in the house of his parents, and in his 12th year he began the preparation of those lectures which he afterward delivered to his students. Later he studied surgery under Maréchal, and in 1692 became military surgeon in the French army in Flanders, where he was charged with the supervision of a hospital in Tournay. After his retirement from the army (1700), he went to Paris, became master of surgery and began to give anatomic and surgical lectures. Some years after (1705), appeared the work on diseases of the bones (chiefly fractures and dislocations), upon which the young Petit laid the foundation of his later fame. This work, of which Boerhaave said "tractatus hic nunquum sibi parem habuit," was for half a century the best of its kind. Petit wrested the treatment of fractures out of the charlatanism of the bone-setters (bailleurs), and instead of straining after theories and hypotheses in the manner of his time, he gave his experiences and operations. It had hitherto been a general misfortune that only those who had no surgical practice were writers, while the practitioners seldom published their notes. The Paris Academy of Sciences and the Royal Society of London admitted Petit as a member, although according to the standards of that time he was no scholar. His reputation soon became so great, that the kings of Poland and of Spain invited him to their kingdoms and made him very flattering proposals, which, however, he declined. He worked many yaars on his celebrated "Traité des Maladies Chirurgicales," which, in three parts, only appeared after his death (1774), and contained a rich experience and a mass of new ideas. Petit wrote little, but his works were classics (mostly in the "Mémoires de l'Académie), and there was no lack of venomous critiques against him. We have him to thank for the invention of the screw tourniquet, by which operations on the extremities became less dangerous; for the circular amputation; the operation for strangulated hernia without opening the hernial sacs, besides many improvements upon methods of operating. He was an eminent operator. *Le Dran*, one of the best of surgeons, officiated with him in the Charité. With clear comprehension and sound judgment he combined an easily understood diction, and distinguished himself above many of his

countrymen for a simple, fundamental exposition. Especially celebrated as a lithotomist, and as one of the first to perform the exartic. humeri, his works ("Obs. de Chir.," 2 Th., 1731), which offered improvements upon many methods of operating, were received by all nations with great applause; Cheselden, indeed, translated his "Traité des Operat." (1742). His works on abdominal wounds and gunshot wounds are good. *Morand*, who was first appointed to the Charité and afterward to the Invalides, owed his scientific education and rich experience to a firmness of purpose and great ambition, and his acquirements made him unsympathetic toward many of his vain colleagues, with their useless inventions of instruments. Never properly appreciated by his country, he declared that he was persecuted by his own countrymen as well as by foreigners (Sharp). Bitterly prejudiced against the Académie de Chirurgie for that reason, he withdrew from it entirely; so La Martinière and Louis could hardly succeed in giving him the position of body surgeon, which involved his assuming the duties of the secretary of the academy. He was appreciated in Germany; E. Platner translated his works and Richter said, in 1776, that a La Peyronie, Le Dran or Morand must soon arise, if the glory of the Académie de Chirurgie was not to fall. Morand endeavored to make surgery as simple as possible, and to spare operations ("Opusc. de Chir.," 2 Bde., 1768–72). He attained a reputation by the introduction into France of the side incision for lithotomy, after he had been sent to London by the Royal Society for the purpose of learning Cheselden's method. With him began the history of exarticulatio femoris, based upon experiments upon animals which he had two of his students make. He also recommended extirpation of the ovaries. In a demonstration of Bilguer's work on amputations, Morand showed himself as having a better mind and a far higher education than his German opponent. In *Garengeot* much energy and mechanical ability were combined with some insolence, in that, in adopting the new methods of other surgeons, he suppressed the names of the discoverers, and ignored their claims. He was demonstrator in the surgical school, and in later years was military physician, and as such was very active in the Seven Years War. Besides anatomic works, he wrote on operations (2 Vols., 1720), and instruments (2 Vols., 1723), works which contained many improvements and were very popular at that time. The invention of the dental forceps is ascribed to him. Even his own countrymen considered him a braggart. *Quesnay* was more celebrated as a national economist than a physician. Appointed by La Peyronie as secrétaire perpétuel to the academy and as professor in the Ecole de Chirurgie, he became body physician to Louis XV., who esteemed him highly, and ennobled him. Frequent attacks of the gout prevented him from employing himself in practical surgery. He wrote of suppuration, gangrene (so-called white gangrene), injuries of the head and trepannation. Imbued with a love of agriculture from his youth up, he advocated, in many political essays, the principle that the prosperity of the state depended on agriculture, and not on the mercantile and manufacturing system. Of almost the same age as Quesnay was *Arnaud* de Ronsil, who in Paris specialized on hernia, and was able to accumulate a mass of material, as the monastic nurses of the St. Lazarus were directed to send to him every patient suffering with strangulated hernia. His monograph on hernia marked a new epoch. He was the first to accurately make known the symptoms and to tell how strangulated hernia was to be distinguished from adherent hernia, to treat herniotomy thoroughly, to describe hernia obturatoria and ischiadica, and to indicate the course of the art. obturat.; for the enlargement of the lig. Poup. he suggested the use of the blunt hook named from him, instead of an incision; and for fear of injuring the art. epigastrica in an operation for crural rupture he entirely avoided the scarification of the abdominal ring. He was demonstrator of bone diseases in the Ecole de St. Côme, but because of certain unpleasantnesses he went to London in 1746, where he practiced for thirty years. Besides the vain *De La Motte* and the eminent operator *De La Faye*, in Paris, there were in the provinces a few noted surgeons. *Le Cat*, in Rouen, was first a priest, then an architect, and finally a surgeon. As an able operator in lithotomy he became involved in a quarrel with Frère Côme, whose method he entirely discarded. *Le Vacher*, in Besançon, a son-in-law of Morand, was also known through his side incisions. In case of cancer of the breast he recommended an operation as the only remedy. *Verdier*, to whom J. L. Petit committed the management of his anatomic theater, was an anatomist rather than a surgeon. He showed that the bladder as well as the ovaries could be contained in the hernial bag. *Anel* was renowned as an oculist in the first half of the century; he wrote on hydrops of the lachrymal glands, and on lachrymal fistula ("de fist. lacr.," 1713), for which he recommended probing and injections with his syringe; he died in Turin in 1730. Then *St. Yves* and *Francois Poufour du Petit*, who measured the diameter of the eye, discovered a new method of depression of cataract, and already in 1727 undertook the extraction of cataract. The dispute over the nature of cataract, which had hitherto been regarded as a film over the lens, attracted Antoine Maître-Jean and Brisseau, who demonstrated on a cadaver that cataract had its seat in the lens.

In the middle of the century lived *Antoine Louis*, a man who in science combined high aspirations and a tireless activity with a comprehensive knowledge of the history and literature of surgery and of medical jurisprudence. His services were more considerable as a teacher and writer than as a practitioner; he advanced surgery itself but little. In place of the tourniquet, he introduced into practice generally indirect digital compression in hemorrhages after amputation, although this was not now first employed, as I have shown in giving the view of Malgaigne and Lister. As one of the first who argued, in Latin, in behalf of the admittance of surgeons into the College, he took a vigorous part in the strife between the faculty and the College. With his passionate temperament, he became involved in quarrels with the monks in the Charité, left it, campaigned a little, and then undertook the presidency of the College St. Côme. After Morand's departure in 1764, he became secretary of the academy, and as such was extremely active. The younger surgeons demanded that the memoirs should not be confined to résumés, and attacked him sharply because of his opposition, and especially Valentin with much bitterness reproached him, asserting that he did not understand the first elements of surgery, knew no Latin, and reproaching him with his experience with a case of harelip in which he had recommended an English plaster instead of the suture; this silenced him. His great vanity would acknowledge

no equal, and his zeal for the academy now cooled to such extent that he discontinued the memoirs, gradually retired, and for the last eighteen years of his life was inactive. The University of Halle had conferred upon him—already a Doctor of Laws and an advocate in parliament—the degree of Doctor of Surgery, and the Academy of Vienna elected him to membership. Aside from his already mentioned work in the memoirs, which was for the most part very prolix, he devoted himself to simplifying instruments, allayed the fears of the public on the subject of being buried alive, and sought to rescue syphilitic cases from the hands of the quacks. Out of the nursery of a poor tailor, *Antoine Petit* raised himself to a professorship. He described two round anterior ligaments which extend from the uterus to the os sacrum, recommended injections through the nose by means of a bent tube for obstruction of the tuba Eustachii, and demonstrated upon a cadaver that the circulation in the thigh is not entirely stopped by ligature of the art. cruralis. The medical school in Paris owed to his generosity two new professorships which he endowed richly; he also founded, with his own funds, a hospital in Fontenai-aux-Roses, and provided for four physicians of the poor in the city of Orléans. *Sue* followed Louis as surgeon in the Charité; he held this position twenty-five years, and was also successor to his teacher Verdier, as professor of anatomy. His works on bandages and elements met with approval. The professor of surgery and inspector of the military hospital, *Hevin*, wrote a detailed work on foreign bodies in the esophagus, through which he saved Verduc's esophagotomy from oblivion; he also wrote on gastrotomy, which he repudiated, and on nephrotomy. *Le Blanc*, in Orléans, published a popular work on operations in which he repeated Le Dran and Louis. In Lyons, *Pouteau*, with his great partiality for moxas, was most prominent. These remedies had been entirely displaced by the hot iron method, but in 1760 he rescued them from oblivion and reintroduced them; he prepared them, as the Egyptians did, out of cotton, and recommended their use in severe rheumatic pains, dropsy, Pott's hump, tuberculosis, etc. He first made known Fleurant's method of opening the bladder through the rectum by means of a curved trocar, and described a method of lithotomy ("Mélanges de chir. and Oeuvres posthumes," published by Colombier). Together with a colleague, he offered a prize of 50 louis d'or for the best work on the nature of cancer poison. Another excellent surgeon was *David*, in Rouen, who in the same year as Pott, described the hitherto unknown caries of the spinal column ("Sur les effets du mouvement et du repos dans les maladies chir.," Paris, 1779). He furnished the first accurate description of necrosis (1782), as well as observations on psoas abscess. Lead preparations, and especially subacetate of lead, were introduced by *Goulard*, in Montpellier, into the treatment of various diseases. *Frère Côme* was known in Paris as a skilful, disinterested, though somewhat crude surgeon. He entered the Hôtel Dieu, then the monastery of the Feuillans, but without renouncing his profession. His methods by means of the lithotome caché (1751) involved him in many quarrels. Further, he contrived a bent trocar for opening the bladder over the symphysis pubis, and the caustic from arsenic, which is named from him. The celebrated obstetrician *Levret* surpassed all his predecessors in this science, and did good service as a surgeon in devising a twisted band for the treatment of polypus in the nose, and in the uterus.

We now come to the close of the eighteenth century. The German and French surgeons had one thing in common in that two of their number far surpassed the rest, and that both lived in the beginning and at the close of the century. Yet there was the greatest difference that the two German surgeons, Heister and Richter had indeed acknowledged gifts, while the French surgeons, J. L. Petit and Pierre Joseph Desault were great surgeons in the true sense of the word, for they possessed genius and experience, two qualities which must necessarily be combined. In spite of the great advancement which French surgery had made in the course of the century, at its close there still existed many needs and many mistaken ideas. There prevailed an unclassified mass of local remedies, which the surgeons modified and multiplied at their own will. There was an abundance of professional skill in the treatment of fractures, but on the other hand, the knowledge of their pathologic significance was slight. Almost daily a mass of instruments and operations were invented and modified. In wounds the tampon was greatly abused, in hemorrhages the bandaging was bad and they were compressed in a still worse manner. An extravagant use of trepanning was made. In the operation for harelip they strove too much after simplicity, at the expense of safety. The operations for rectal fistula were overdone, and the treatment of diseases of the urinal ducts was still in its infancy.

Now appeared *Desault* (1744–1795). As a poor village boy, he was instructed by the Jesuits in the ancient languages and mathematics; he made great progress in the latter and in order to maintain himself honorably he gave instruction in geometry. His father destined him for the priesthood, but in vain; he applied himself to surgery, but from his first teacher he was able to learn only shaving and bleeding. At the school in Béfort, anatomy was his favorite study. After five years he went to Paris, where, at that time Louis, Morand and Sabatier shone as surgeons; Verdier and A. Petit as anatomists. "To learn was his first requisite; to know, his first sweet pleasure; to surpass the others, his first passion." After a six months' illness, in consequence of great exertions in the anatomic amphitheater, in 1766 (the same year in which A. G. Richter began to teach) he offered, for the first time, private lectures in anatomy. At first, he encountered endless obstacles. The professors became resentful when their lectures began to be deserted, and those of Desault (who had scarcely left school) to be crowded; envy and fear of being eclipsed by the rising star excited them. Louis, who had persuaded him to adopt the profession of teaching, attended his lectures a great deal in order to give them prestige through his own reputation. At that time, instruction in anatomy, in the detail of its descriptions, was still very inaccessible. Desault brought to its study a greater accuracy and system, and while he adapted it to the needs of the surgeon, *he created surgical anatomy in France.* In a few years public opinion regarded him among the greatest anatomists. He was not compared to the celebrated surgeons; jealousy sought, by the exaggeration of his fame as an anatomist, to overshadow his reputation as a surgeon. His career as a surgeon began with lectures on operations, and by his accurate descriptions Desault attracted a large number of students. He invented a new bandage for fracture of the clavicle, the regular setting of which had for centuries

been thought impossible, but the test of it, for lack of practice, had to be left to others, and was successfully made in the Salpetrière. For amputations he recommended the straight knife instead of the curved, an improvement which was recognized in the Hospital Bicêtre. He introduced again the direct ligature of the arteries, which seems to have been forgotten in France since Paré; it was first employed in amputations at Bicêtre. Louis, curious to see the result, feared the cords would be removed too soon, but after four days they had to be cut in order that the healing should not be retarded. These discoveries laid the foundation of Desault's fame in surgery, which now gained for him a professorship in the Ecole pratique, although, because of his poverty he was not a member of the Collège de Chirurgie. In spite of much secret opposition they made an exception and elected him to that body (1776). This gave occasion for his "Dissertation on the Extraction of Bladder Stones," a work marked by accuracy and conciseness. In 1779, he, with his friend Chopart, published the "Traité des maladies chirurgicales et des opérations," but later he would not acknowledge this work, which contained much that was old, incomplete and confused, so he had as many copies as possible bought and burned. In 1782, he became first surgeon in the Charité, and there prepared a cabinet of anatomic specimens. Three years later he removed to the Hôtel Dieu, where we have already become acquainted with him as a teacher. During his great activity in the hospital, Desault began to fill the gaps in surgical pathology. Disgusted with the superfluities in the system of surgical remedies, he limited their number. Bold in undertaking and persistent in carrying out his designs, he transformed almost every branch of the science of operations, returning to the utmost possible simplicity in methods of operating. He accurately described luxation of the radius, and devised a bandage for the little-known fracture of the olecranon, by which the bending of the forearm would be prevented. He adapted this to the analogous fracture of the patella. He also contrived a new bandage for the upper thigh. He made the bandaging of Theden in case of varicose ulcers universal, and recommended the use of the tent in case of scirrhous tumors of the rectum. He rescued many methods from oblivion such as the continuous extension in fractures, the ligature in case of umbilical hernia, the gorgeret of Marchettis in case of fistula of the rectum, and so forth. With diseases of the urinal passage he considered the puncturing of the bladder as a superfluous method. He was the first to show the great value of the flexible sound, which could serve at the same time as a conductor of food into the stomach, and to remove foreign bodies in the esophagus. The ligature for throat polyps, was simplified, the kiotome and an instrument for the extraction of foreign bodies from the bladder, by which lithotomy could be avoided, were invented. Desault attached his name to an operation for aneurysm and introduced into France the ligature of the artery above it, and suggested in certain cases a ligature under the sack. An amputation was, to him, only a last resort. He was the first in France to show the unsafe nature of the results of trepanning, the use of which must be limited; he showed also the advantages of tartarus emeticus in cases of concussion of the brain, etc. As an operator he was bold, skilful and simple, and sought to introduce good instruments to general use, discarding what were superfluous.

The many innovations through which he, a model of correctness in observation, gave to surgery a greater simplicity, almost entirely changed the form of the science; on this account the difference between the surgery of the books of his time and that of his lectures is extraordinarily great. Desault's practical mind widely extended the limits of his profession, and there began with him, as the founder of the surgico-clinical method of instruction a new epoch in French surgery, which was based chiefly upon anatomy and physiology.

Hitherto his teachings had become known only through his numerous students, and in being disseminated from mouth to mouth had frequently reached the world in a mutilated condition. In 1791, therefore, he began to publish a *Journal de Chirurgie*, with reports of his clinics (4 Vols.), according to Richter's opinion the most important contribution which had been made to surgery for a long time. In the latter years of his life, in order to fill in the gaps in this work, Desault chose as an assistant his favorite pupil, Bichat, whom he took into his house and to whom he dictated his ideas. (J. L. Petit had worked in a like capacity.) In this way the "Surgical Inheritance," published by Bichat (3 Vols., 1795) was written.

Desault was for a long time a member of the Académie de Chirurgie, but turned away from it, as the taste for medical association was lacking in him. Slow in thought and at times difficult of perception, he had no love of those empty hap-hazard disputes, and found no enjoyment in work of which the graceful style was the best part.

When the storm of the Revolution broke out he was almost the only one who continued to give surgical instruction; in spite of his faithful work in the Conseil de Santé for the regulation of the medical service he did not escape proscription. Not a day passed without new denunciations, until finally his implacable enemy, Chaumette, the president of the Commune, twice had complaint made against him on the ground that he had refused his services to the wounded. The Committee of the Revolution issued a warrant for his arrest (1793); he was arrested in the middle of a lecture in the Hôtel Dieu and according to the report of his persecutor was incarcerated in the prison of Luxemburg "for the honor of mankind." Numerous appeals from patients and students poured in, so that after three days they were compelled to liberate him. He resumed his lectures. In the following year he was chosen professor in the newly established Ecole de Santé, for which, however, he had no sympathy. The political disquiet, the fear of new proscriptions, the death of certain friends in battle and on the scaffold shocked him deeply; from this time on he became feeble. Suddenly he was stricken with a violent nervous fever. His pupils streamed in to take care of him; Chopart and Corvisart treated him. He was delirious from the first and died on the fourth day. The people said he was poisoned, because he died a few days after the death of Louis XVI., whom he had treated in the Temple; they said he fell as a sacrifice to his steadfast denial concerning any criminal intentions on the life of that child, and other similar stories.[1]

[1] The commissair of the Temple, Breuillard, asked him: "C' est un enfant perdu, n' est ce pas?" The answer was: "Je le crains, mais il y a peutêtre dans le monde des gens qui l'espèrent."

The Moniteur for June 4, 1895, says: "La France, l'Europe entière vient de perdre le citoyen Desault, officier de santé en chief de l'Hospice de l'humanité, le premier dans la pratique comme dans l'enseignement de l'art, qu'il a professé. Son nom est depuis longtemps célèbre dans tous les pays du monde où la chirurgie est en honneur, son nom ne périra point. Son pays lui doit d'immenses travaux et de nombreux

According to Bichat's account, Desault was a man of middle stature, strongly built. Sharp features, small eyes, a full forehead and round face gave his physiognomy a certain severe, though not forbidding, expression. His step was vigorous, his carriage noble, his gesticulation animated, his voice strong, his speech at times difficult, as if his lips did not always find the right expression for his feeling. His diction was seldom elegant but always expressive. He knew no other pleasure than to study and to teach. He early won the confidence of the public, but for a long time neglected it, in so much that, according to his own confession, up to the age of 32 he had not earned six livres in his practice. His rare zeal led him to sleep in the hospital, that he might be always at hand, although he was not compelled to do so. In spite of his noble and generous soul, which loathed all the machinations of intrigue, his spirited and passionate character often carried him too far, so that the students did not always enjoy gentleness on his part; yet he was easily calmed again. A thirst for fame possessed him; with this and with his aspirations for surgery he imbued all his students. Desault had many friends, whom he gladly met; yet jealousy also provoked enemies, whose aspersions he met with silence and contempt. There have been few surgeons who wrote so little and yet whose fame extended so widely. He was surrounded by the most favorable circumstances for developing talents and every year the enthusiasm of 400 students proclaimed his discoveries. His teachings spread through the surgical world with great rapidity. Bichat said that Desault had found his own peculiar way of observation and had little learning; his genius alone, with which science had little to do, was the source of his services. His judgment, in this case, as in the case of A. G. Richter, was at fault. Desault was certainly not learned in Latin flourishes and quotations which passed for learning at that time. Bichat himself admitted this when he denominated as superfluous that sort of surgical learning which moved a hundred learned pens to write that which fifty writers before them had borrowed from twenty others, who in turn had copied. Desault knew the writings of his countrymen and also of the English and Germans, wherein he distinguished himself above most Frenchmen. He understood how to make use of foreign material and with this kind of learning contributed materially to science. Medicine appeared to him as a dark labyrinth, in which men wandered at random. He also thought that it was not possible to practice both professions at the same time to advantage, and, fed by partisan spirit, was fixed in his opinion against obstetrics and even against medical assistance in surgery. His enemies are fond of quoting an assertion which has been ascribed to him, that surgery must be reduced almost entirely to the knife and that six months were sufficient to educate a good surgeon. Desault was a genius created for surgery, and left his mark on everything he touched. They were able to say of him that if surgery had not existed it would have owed its origin to him.

His teacher was *Sabatier*, at first an anatomist, afterward Morand's successor in the Invalides and professor of operative surgery in the Ecole de Santé. Napoleon appointed him a member of the National Institute and also consulting surgeon. To his quiet but tireless progress surgery owed many improvements. Among many writings the most important, aside from an anatomy, is his "Médecine Opératoire" (3 Vols., 1796); clear and exhaustive, written possibly with too little critical spirit, it excelled the earlier handbooks. *Chopart*, sick and old before his time, wrote a long work on diseases of the urinary organs and introduced a partial amputation of the foot. When his truest friend, Desault, became seriously ill he did not leave him for a moment. They said that grief, possibly combined with an injury which he had suffered to his foot, contributed largely to his sickness immediately following; he died a few days after Desault. *Lassus*, in Paris, was very learned; he was a good teacher but made few original observations. The works of *Deschamps* contained nothing new; his eight-volume works on lithotomy was only of historic value. Desault's successor, *Pelletan*, whose activity in hospital work we have already mentioned, in his "Clinique Chirurg." (3 Vols., 1810) described many interesting cases, and among them was the first accurate description of fatty hernias. We will return later to the French military surgeons.

At the end of the eighteenth century, there opened a new epoch in French medicine, as well as in surgery. The herald of it was one of the deepest thinkers and finest observers, which the history of medicine presents—*Xavier Bichat* (1771–1802). He died at the age of 31, the creator of a new science, histology, and should be placed at the side of men like Aristotle, Bacon and Descartes, whose works, just as his own, mark an epoch in the history of human thought. His mind, richly equipped with the positive knowledge gained in Desault's school, had no less an object than, by an accurate study of the human organism, to tear down the structure of the old medical science and build up a new one. He perceived that the experiment which Cuvier had introduced to that end, did not suffice, and so he began to examine the tissues. Two years before his death, his "Traité des membranes en général et des membranes en particulier" appeared, and in 1801, his celebrated "Anatomie générale," in which it was shown that the whole human body consisted of twenty-one different simple tissues. He had examined each of these in its changes through differences in humidity, atmosphere, temperature, in different periods of life and in disease, in order to determine the normal and pathologic development. He realized that these investigations must in time come to be of the highest importance to pathology, and that medical observations were of no avail, if one did not know the seat of the disease. In another, just as celebrated work, "Recherches physiologiques sur la vie et la mort," he distinguished the various systems of which the organism is made up: the ganglion from the cerebral system, the organic from animal life. Bichat's doctrines had the greatest influence in the medical science of our century, and were received with the greatest applause throughout Europe. Too early, he became a sacrifice to his science; a restless activity in anatomic and surgical lectures, and in the anatomic amphitheater (in a sin-

élèves. En ce moment la République n'a point une armée dont les plus habiles officiers de santé ne soient les élèves de Desault. Telle fut la supériorité de ce grand chirurgien, que la postérité qui commence, hélas! trop tôt pour lui, le nommera sans doute un grand homme. Desault fut un excellent citoyen; nos derniers tyrans l'avaient persecuté. Leurs derniers complices ont causé sa mort. La journée du 1. prairial a déterminé la crise désespérée qui l'a précipitée à 49 ans dans le tombeau. Un de ses amis inscrit à l'heure même des funérailles ces vers au pied de son buste:

Porte du temple de Mémoire,
Ouvrez-vous! il l'a mérité.
Il vécut assez pour sa gloire
Et trop peu pour l'humanité.

gle winter he conducted 600 dissections, which kept him day and night in the atmosphere of cadavers) planted the germs of sickness; yet, when dying, he regretted that he could not complete his work. Corvisart could justly maintain to Napoleon, that no one had accomplished so much that was useful, in so short a time. In him an amiable reservation was united with strong passion; he counted fame as the food of his talent, and the hope of gaining it was the stimulus for all his work. Along with Bichat, Pinel and Corvisart in Paris, made themselves especially prominent in French medicine, in that they first insisted on the importance of objective phenomena and considered the anatomical element before all others. *Pinel* again brought forward the observation of nature, in his "Nosographie Philosophique" (1798) which was based upon the principles of Hippocrates. According to him, sickness was an abnormal variation of the various organic tissues; one must therefore consider the symptoms as external indications of disease, along with the variations of the organs, examine the seat of the disease, and only draw conclusion after a mass of phenomena had been observed. While supporting the old principles of the earlier school he gave French medicine the form of a physical science, and as an enemy of all manias for medical systems fought with the best results the Brown swindle in France. *Corvisart* recommended in his medical clinic the new medico-diagnostic method, and especially recommended the observation of the physical symptoms. To this end he rescued from oblivion the percussion method of Auenbrugger, and improved it (1808).

(To be continued.)

SOCIETY PROCEEDINGS.

The Mitchell District Medical Society of Indiana.

Proceedings of the Annual Meeting held at West Baden Springs, Indiana, June 8 and 9, 1897.

REPORTED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION EXCLUSIVELY.

FIRST DAY—MORNING SESSION.

The Society assembled at 9 A.M., and after hearing the reports of the officers and standing committees, adjourned to 2 P.M.

FIRST DAY—AFTERNOON SESSION.

The Society met promptly at 2 o'clock, with the Vice-President, Dr. J. GARLAND SHERRILL in the Chair.

The first paper presented was by ADOLPH O. PFINGST, M.D., on

BLENNORRHEA NEONATORUM.

Until 1806 this disease was supposed to be due to scrofula, exposure of the eyes to the bright light, to cold, etc. Its relation to vaginal and urethral diseases was first pointed out by Schmidt in 1806. The true nature of the infecting material, however, was first made known in 1879, when Neisser demonstrated the gonococcus in the discharge from the eyes. Dr. Pfingst said that infection of the new-born child has usually taken place in transit. The child may, however, escape infection, and have the poison transmitted to it after birth by uncleanliness of the attendant. Usually within twenty-four hours after infection there is abundant discharge of pus, along with chemosis of the conjunctiva, and swelling of the lids. The disease reaches its acme in from four to ten days, and the swelling of the lids, and chemosis of the conjunctiva recede by the twelfth day. One eye is usually first affected, the disease appearing on the second or third day after birth; while in from one to four days later, the second eye is affected. The disease in the second eye is seldom as severe as in the first. He believes too much reliance is placed on the nitrate of silver, and regards swelling as an indication for cold applications; in this stage of the disease the silver is apt to do harm. Attempts at making applications of silver lead to the aversion of the lids, a manipulation in the performance of which causes abrasions of the cornea, thus providing for the ready entrance of the infection into the deeper structures. His method of applying cold is to have small pieces of linen, or small bits of cotton on a cake of ice, near the patient, and transfer these from the ice to the eye, and change every minute for an hour at a time. After two hours the cold applications are to be renewed as before. Every fifteen to thirty minutes the eye should be opened and flooded with some solution, as boric acid, or sterilized water. He believes the dangerous character of the disease should be thoroughly impressed upon the parents and attendants. After all swelling has subsided, he then begins with a 1 per cent. solution of nitrate of silver, increasing gradually to 3 per cent., making the application once every day, and following each application by irrigation with sterilized water. He has used argonin, experimentally, in a child five days old, and found it less irritating than silver, the disease yielding promptly to the treatment. His experience in two other cases has been equally encouraging.

Dr. DUDLEY S. REYNOLDS, being called on to open the discussion, expressed his approval of the sentiments of the essayist in regard to the irritating effects of nitrate of silver. He said he had not used the nitrate in any case for any purpose, for more than fifteen years. He cited the case of a man 27 years of age, in the second week of gonorrhea, who came to him on Friday evening with the right eye red and watery; the patient complained of a burning sensation in it. He prescribed borate of sodium solution to be instilled into the eye every hour until the irritation subsided, and directed the patient to report the next morning at 9 o'clock. On the second visit the eye was swollen, and there was a discharge of bloody serum mixed with the tears. He at once sealed the left eye with Buller's shield, and sent the patient to the hospital, with the following prescriptions:

℞.	Sodii boratis	ʒ iij	96 00
	Sodii chloridi	ʒ j	32 00
	Acidi carbolici (C. P.)	ʒ ss	2 00
	Aqua destillatæ	cong. j	4000 00

Misc. Ft. solutio. Sig.—Use as an irrigation for the eye every twenty minutes.

℞.	Balsam copaibæ	ʒ j	4 00

Misc. Ft. capsulæ No. 12. Sig.—Take one every three hours, with a cup of malted milk or beef tea (made of Armour's extract) alternately during the day.

The patient was allowed to drink water *ad lib.* The eyes were directed to be irrigated every hour through the night. This treatment was persistently carried out. The superior periphery of the cornea became clouded. The chemosis of the conjunctiva on the third day was so great that only a small portion of the vertex of the cornea was visible. The lids were simply pulled apart to allow irrigation to be done, no attempt at eversion being made. After the sixth day, the swelling having subsided, and the chemosis still being extensive inferiorly, it was drained out above by a superficial ulceration of the cornea. The treatment was not changed, however. On the eighth day the following was ordered:

℞.	Hydr. bichloridi	gr. j	065
	Sodii chloridi	ʒ j	4 00
	Aquæ destillatæ	ʒ vj	192 00

Misc. Ft. solutio. Sig.—Drop into the eye every evening, once after irrigating.

On the twelfth day there was no discharge from the eye, and the bichlorid solution was discontinued, the irrigation being repeated three times a day. The capsules of copaiba were continued all this time. There was now no urethral discharge. On the fifteenth day fluid nourishment was discontinued, and the patient was allowed to go to the table with convalescents. On the seventeenth day he was allowed to leave the hospital, having entirely recovered. The superficial ulceration of the cornea was limited to the periphery. There is to be expected from this plan of treatment almost uniform results, where it can be carried out rigidly. He does not believe anybody but a trained nurse can successfully conduct this treatment.

In closing the discussion, Dr. Pfingst said, he was pleased to hear Dr. Reynolds proclaim his opposition to nitrate of silver, and especially so, as he had suggested a successful substitute. He had formerly seen no case treated without it. He mentioned that Dr. Knapp of New York, had abandoned the nitrate of silver in such cases, and now relies upon ice and irrigation, in both infants and adults. Whether the ice or the irrigation is most important it would be difficult to say. Indications for the cold applications, however, are swelling of the lids. By request Dr. Reynolds gave his views on Credé's method of protecting the eyes of the new-born. He believes it impossible for the eyes to become infected during the period of birth, as the closed lids, protected as they are, at the line of

contact, by the lash, over which the vernix caseosa is spread evenly, the pressure of the maternal parts can only secure more complete closure of the lids. The period of incubation of the gonococcus is not greater than twelve hours from the period of inoculation. It will, therefore, appear at once, that it is impossible for inoculation to take place during birth, and show no sign of its presence for twenty-four or forty-eight hours after the birth of the infant; and, it may be truthfully stated that a majority of the cases do not appear until after the third day. He believes the attempt to instill anything into the eyes of the new-born should be regarded as meddlesome interference, fraught with mischief only. This opinion is based upon a large experience at the Louisville City Hospital. He has known periods of time when Credé's method of protection was employed, and every eye so treated became subsequently infected with purulent matter. For months at a time, when no interference was permitted, no case of ophthalmia appeared. I am as certain, said he, than ophthalmia neonatorum is nearly always the result of inoculation by the nurse, or others handling the infant after its birth, as I am that three and two make five. He does not believe it possible for the eyes to become infected during the period of birth, excepting in badly managed cases of instrumental delivery. He feels assured that if neither the accoucheur nor the maternal nurse are allowed to touch the eyes of the child, they will almost certainly escape infection. Those eyes alone are in danger which are handled by the same fingers that handle the mother, or are engaged in handling infected persons.

Dr. EDMUND D. LAUGHLIN introduced the subject of "Minor Surgical Procedures," which in his judgment include the first handling of emergency cases. Many a case of comparatively insignificant injury assumes a more or less alarming gravity and importance by the careless manner of the first handling of the case before it goes to the hospital. He believes that the same antiseptic precautions should characterize the first touch in every case of mechanical injury that surgeons undertaking capital surgery observe. If persons likely to be called on to take charge of the injured or wounded at the time of accident, are to be selected from the laity, they should be properly trained in aseptic methods, in order that no dangerous infection result from the first handling of the patient. If surgeons allow themselves to manipulate injured parts with unclean hands, it can scarcely be expected that persons unfamiliar with the principles of aseptic and antiseptic methods may be safely entrusted to touch the wounded, even in conveying them to the hospital.

Dr. J. GARLAND SHERRILL of Louisville read a paper on

PERITONITIS.

He devoted the principal part of his paper to the discussion of the proper management of infected cases. He believes the amount and character of the infecting dose will determine both the degree of severity of the attack and the rapidity of its development. Tuberculous peritonitis is now regarded as clearly a surgical affection. The tuberculous peritonitis characterized by miliary nodules in the walls of the peritoneum, not complicated by tuberculous processes elsewhere, almost uniformly yields to the devices of surgery and no sort of medication will serve even to mitigate or delay the progress of such cases. In plastic peritonitis, saline purgatives are restorative and sometimes curative; in septic cases operation may save life, medicinal treatment never does. The indications for operation in peritonitis may be stated briefly as follows: When the focus of inflammation can not be reached through the natural outlets, when the patient exhibits anxiety and mental depression. If the pulse is above 140, of diminishing quality, although operative interference may be clearly indicated, the prognosis is grave and no delay should be permitted. He admonishes the profession against the use of opium in all cases, as it diminishes vital energy, obscures the intellect, arrests excretion and masks all the important symptoms by which the surgeon might otherwise be guided in his choice of methods.

Dr. ULRICH H. HON of Bloomington related a case in which he used opium, saline aperients, fomentations, stupes, etc., with a promptly fatal result, the patient and friends declining operative interference. He believed, however, it would be impossible to altogether dispense with opium.

Dr. PHILIP C. HOLLAND related a fatal case in which hepatic abscess ruptured in the inguinal region, discharging one gallon or more of fetid pus. In another case where the inciting cause was appendicitis, operation was followed by returning abscesses and the patient finally succumbed.

Dr. THOMAS A. HAYS thought the general practitioner must have some ready and promptly efficient agent for the relief of pain. He reported an interesting case of appendicitis in which he had consultation, and operative interference was decided necessary; later the patient relapsed and presently a conical tumor appeared in the iliac region. The tumor ruptured spontaneously and the patient discharged large quantities of pus through the bowels. The patient finally recovered. Another case of recurrent appendicitis finally recovered without surgery. He asked whether Dr. Sherrill would advise operative interference in recurrent cases. Dr. Sherrill said in reply that the tendency to recur in appendicitis is one of the characteristics of the disease, and the time to operate is not always easy to determine. He knew of no rule that might be laid down for any considerable number of cases. When rupture takes place into the bowel no operation should be attempted, as recovery will almost necessarily follow. As a general rule, however, he would consider that the danger is far less than the danger of septic peritonitis from rupture. Although opium might be necessary in cases of hepatic calculus, because we have no better means of combating pain, he simply abhorred its use in all forms of peritonitis, and would include in this list all cases of appendicitis.

Dr. E. D. LAUGHLIN, whose experience has been large and who was one of the earliest operators in the field, adopting the report of Dr. Buck of New York in 1872, which, after full discussion in the journals, turned out to have an apparently scientific foundation, reported his own first experience in 1875. He well remembered the first case in which he used the knife, evacuating nearly a half gallon of pus from the peritoneal cavity. At that period he made no attempt at excising the appendix, but contented himself with evacuation of the abscess, irrigation of the cavity and drainage. He occasionally sees cases in which aconite and opium with hot or cold applications promptly secures relief. His rule in reference to the selection of cases for operation is this. He practices aspiration daily and as soon as pus appears in the aspirated fluid he operates; otherwise he relies upon medicinal treatment. His patients rarely die. His success is such that he feels entirely satisfied with his method. He regards irrigation and drainage as all sufficient. He asked Dr. Sherrill what he considers the best method of drainage, what kind of tube he prefers, and how he manages to keep it clean.

Dr. SHERRILL said, in reply, that the best drainage is by means of a glass tube, frequently sucking up the accumulation with a sterilized syringe, thus keeping the tube clear. In cases where there is much oozing of blood, he prefers to secure drainage by packing the wound with gauze, using only the pure sterilized material. In appendicitic cases, where the inflamed area is not in contact with the anterior abdominal wall, he always packs the wound with gauze before operating. He believes that whenever the disease produces a feeble and frequent pulse, with an anxious and careworn expression of countenance, the conditions demanding surgical interference are present. In all such cases he considers it little less than trifling with human life to delay.

Dr. ULRICH H. HON offerred his protest against the sweeping denunciations of opium which had been made in this and other societies. He considers that an agent so long relied upon by the profession and people to relieve pain should not be lightly spoken of. While he uses it sparingly he considers it an absolute necessity, and the chief if not the sole reliance in neuralgia, and the pain of peritonitis, appendicitis and a large class of other afflictions.

Dr. SHERRILL thought that Dr. Price was rather too radically dogmatic in his denunciations of opiates, and while he himself will not consent to entirely give up its use, he is convinced that the indications for its use are very narrow and diminishing annually. He could scarcely think of any condition, excepting the pain of bilious colic, in which its use could not be dispensed with.

Dr. DUDLEY S. REYNOLDS said: The hour of necessity for revising and recasting the long established theories of pathology is now upon us. We can have no excuse for prescribing remedial agencies that overwhelm the sensorium, destroying the patient's consciousness of his suffering, when a reasonable familiarity with the principles of pathology might disclose the cause of the pain. If pain is due to local inflammation or simply to blood pressure, opium is positively contraindicated. The salicylates, pilocarpin, saline aperients and electricity may be relied upon in many of these cases; opium never. The so-called neuralgia of anemic persons may be relieved by systematic feeding. The pain of gastro-intestinal irritation, whether due to pressure of distending gases or the local irritation of abnormal ferments, will not only fail to yield to opium, but the patient's life may be endangered by its use, in obtunding the sensibilities of the patient; while dangerous inflammatory processes may be kindled in the intestinal tract. In rheumatic or gouty pains the salicylates act promptly and efficiently; opiates add nervous prostration and still further obstruct all

the emunctories, thus aggravating all the conditions of the disease and limiting the chances of reëstablishing active elimination, upon which alone recovery depends. The pain of iritis is nearly always severe, frequently agonizing at night, but it yields promptly to the salicylates and is always aggravated by opiates. The same may be said of the early stages of inflammatory glaucoma. It is better to do nothing where no probable cause of pain can be discovered than to poison the vital centers with opium. Recent pathologic research, with a due consideration of our methods of diagnosis, will nearly always unfold rational principles of therapeutics. Ignorance overwhelms the patient's sensorium and flatters itself that the relief of pain at any cost is a consummation devoutly to be wished. That opium in some form will, for a long time, continue to hold an empiric place in the materia medica I do not doubt. That it has now or ever has had any scientific place I most emphatically deny. It is not a good substitute for atropin in bilious colic; it can not take the place of chloroform as a general anesthetic; its use in diarrhea is not only empiric, but positively pernicious, as it suspends peristalsis, which is nature's mode of expelling dangerous ferments.

On motion of Dr. Burton, a paper entitled "Empyema in Children," by Prof. Philip F. Barbour of Louisville was read by title and referred for publication.

On motion of Dr. Burton, the following Committee on Necrology was appointed: C. F. Askren, U. H. Hon, G. W. Burton and E. D. Laughlin.

On motion the Society adjourned to 8 P.M.

EVENING SESSION.

Promptly at 8 o'clock the Society was called to order by Vice-President Sherrill.

Dr. WM. D. PENNINGTON of West Baden delivered an exceedingly well-written and appropriate Address of Welcome, in which he set forth why a medical society should meet at a health resort, and expressed officially a cordial welcome in behalf of the proprietors of the Springs and the profession of that locality.

At the conclusion of Dr. Pennington's address Dr. Dudley S. Reynolds of Louisville was called on to respond in behalf of the Society.

On motion of Dr. WM. V. MORGAN of Indianapolis, the President appointed the following Committee on Nominations: Prof. P. Richard Taylor, Louisville, chairman; Dr. G. W. Burton, Mitchell; Dr. Edmund D. Laughlin, Orleans.

On motion, the Society adjourned.

SECOND DAY—MORNING SESSION.

The Society met prompty at 9 o'clock, Vice-President J. Garland Sherrill in the chair.

Dr. ELIHU P. EASLEY of New Albany read a paper on

ALBUMINURIA, ITS CAUSES AND SIGNIFICANCE.

He pointed out those delicate changes in the blood supply of the renal organs, varying from slight congestion to inflammation, in which the albumin is eliminated in varying quantities, with or without tube casts; maintaining that elimination of albumin is simply one of the phenomena of blood pressure in the kidneys. Besides a wide variety of local irritants, this condition is often due to derangement of the heart's action. It attends certain organic diseases of the heart, and is a well-known condition in cases of prolonged pyrexia. A variety of toxic conditions of the blood which alter or disturb the blood supply to the kidneys, as well as those which affect their nutrition, are recognized as causes of albuminuria. Finally, it may result from any cause of faulty elimination of the debris resulting from physiologic changes.

Dr. B. MERRILL RICKETTS of Cincinnati, opened the discussion. He had no doubt that various forms of toxemia caused albuminuria. He recited a case of auto-infection in an aged man with prostatic enlargement, in which albuminuria was a symptom. In acute congestion of the kidneys lumbar nephrotomy has been found an efficient remedy for the constitutional symptoms. At the same time it has been known to promptly correct the albuminuria. It has been employed in both acute and chronic nephritis. In cases attended with general dropsy, drainage relieves the overtaxed renal organs. In a desperate case, Dr. Ricketts opened the abdomen, evacuating an enormous quantity of fluid and irrigating the peritoneal cavity with a normal solution of chlorid of sodium. He kept up the drainage by means of a tube, which he retained in the abdominal wall. The patient lived in comparative comfort for ten weeks. Muscular debility was greatly relieved by massage, while the symptoms of impending suffocation were completely controlled by peritoneal drainage. The amount of albumin in the urine was not altered in this case, but it is certain that the patient's life was greatly prolonged, and the state of his existence rendered vastly more tolerable.

Dr. JOHN L. MASTERS of Indianapolis, has observed in cases of albuminuria, attended with retinitis, that in proportion as changes in the retina would diminish by dietic and constitutional treatment, the albumin diminished *pari passu;* and he has no doubt of the fact that blood pressure, if not the cause, is a constant companion of that form of retinitis so often found in persons with albuminuria.

Dr. SHERRILL recited the case of a woman with pelvic disease, suffering with albuminuria, and a grave form of heart lesion. The necessity for surgical interference was so great that chloroform was administered, and an operation done, relieving the patient of a painful, and almost intolerable state, without influencing either the condition of the heart, or materially altering the amount of albumin in the urine. As a rule he fears to operate in such cases. In emergencies, however, he considers the use of chloroform comparatively safe.

Dr. RICKETTS, in answer to a question, said there was no contra-indications to necessary surgery in the mere presence of albumin, even with tube casts.

Dr. E. D. LAUGHLIN reported the case of a man 27 years of age with albuminuria, hyaline tube casts, and occasional attacks of hematuria. In this case the salicylate of sodium and bicarbonate of potassium in an infusion of gentian, regularly administered, gave prompt relief to the distressing headache, and finally brought about complete recovery. This was a desperate case, and extremely unpromising, but two years have now elapsed since the treatment was discontinued, and the man remains robust, strong and hearty, thus verifying Dr. Reynolds' views concerning the value of the salicylates in nephritis, as well as other local inflammations.

Dr. EASLEY, in closing the discussion, related a case of a pregnant woman who was promptly relieved of albuminuria by an infusion of stigmata maydis. As pregnancy advances, the disease may return, and it may be that other measures will have to be resorted to.

Dr. B. MERRILL RICKETTS of Cincinnati, read a paper entitled

PROLAPSE OF THE RECTUM, AND HEMORRHOIDS.

He denounces Whitehead's operation, and likewise what is known as the American operation. He considers postural treatment an important adjunct. He also believes that postural habits may greatly obviate the liability to prolapse of the rectum. In chronic cases of prolapse, of the third and fourth degree, he believes that section, and anastomosis offers the best means of relief. This, however, is by no means the only method to be employed. In extreme cases of the fourth degree he has for a long time practiced the process of reefing the intestine by a submucous ligature introduced by passing a small semi circular needle into the mucosa, keeping the point as nearly within the muscular wall of the tube as possible; the needle being armed with kangaroo tendon is brought out at the point of entrance, having described a complete circle. This tendon is then tied up tightly, and in the same horizontal plane a second, and then a third suture completes the necessary folding up or reefing of the tube. This folding together of the intestine is preferable to any attempt at invagination, as the subsequent inflammatory adhesions incorporate the confined tissues of the mucosa into a conglomerate mass with the surface of the muscularis. A second operation in the same case may be necessary to complete the reduction of the prolapse. This is rarely necessary, however, even in cases of the fourth degree. After a series of elaborate experiments in the preparation of suitable material for a suture, he has been led to prefer the kangaroo tendon because it may be relied upon to remain *in situ*, without softening, for at least thirty days, giving ample time to secure a fixed position of the parts in their new relation. In preparing this tendon for use he warns the profession against formalin, because it is not only highly irritating to the tissues, but makes the tendon friable, and insecure from its liability to break. Dr. Ricketts exhibited his needle, and presented each member of the society with one. It is curved about 195 degrees, and represents a section of a circle about two and one-half inches in diameter. It is simply a strong steel needle.

Dr. WM. V. MORGAN of Indianapolis, has occasionally been rewarded with satisfactory results after linear cauterization. He has been occasionally successful, in cases of the first and second degree, by the introduction of kangaroo tendon just within the mucous line of the anal orifice, completely encircling the rectum at the inferior border of the sphincter. Placing one finger in the anus the kangaroo tendon is tied tightly and the knot pushed in so as to bury it from sight. This amount of contraction by a sort of puckering string, sets up irritation, restores activity to the contiguous muscular fibers, and secures the patient from a tendency to prolapse. He thinks that Dr. Rickett's operation is perhaps better in cases of the third and

fourth degree. He has occasionally practiced the method of dilating the sphincter by passing one finger at a time until the whole five were introduced, pushing the hand up in the rectum as far as the sigmoid. Where dilatation has been practiced in this manner, good results have frequently followed.

Dr. RICKETTS, in conclusion, spoke of excision of the rectum as high as the sigmoid, in severe cases. He expressed his unalterable opposition to clamp and cautery, which he has reason to believe is too often followed by secondary hemorrhage. He thinks there are some operators who advocate this plan, who could throw a good deal of light on the subject if they felt so inclined.

The next paper was

LACERATED WOUNDS OF THE EYE

By Dr. DUDLEY S. REYNOLDS of Louisville. He recited a number of cases of severe injuries to the eye in which ultimate recovery followed. One was an extensive laceration of the cornea, iris and crystalline lens, with a foreign body which had been in the eye for five days. The foreign body being removed, iridectomy was done and the lens underwent slow absorption, resulting in complete recovery, with good vision. Another case of a stone cutter, who had extensive laceration of the cornea, the iris and lens being involved, iridectomy was done and the lens extracted at once. In this case recovery followed. This patient returned to his business for several years and finally took charge of a small store, kept a set of books, and enjoyed good vision until the time of his death, which occurred recently. Another was a case of extensive laceration of the sclera, evacuating a large amount of vitreous humor and rupturing the capsular ligament of the lens, allowing the iris to protrude through the scleral wound. Iridectomy, with suturing of the scleral wound, was followed by recovery. The eye becoming cataractous, the lens was extracted eleven years subsequent to the original injury; and on April 13, 1897, the opaque capsule in this eye was divided with needles and the patient with +16.00 D. was able to read No. 1 Snellen. Although the field of vision is greatly contracted, acuity of perception is perfect. He recited another case of interest in which a guncap had produced an extensive laceration of the sclera, exposing the ciliary muscle. The wound united promptly, leaving the eye apparently free from any irritation. Remaining so for a few months only, it became irritable, and subsequently developed a typical form of inflammatory glaucoma, with ultimate loss of sight, and sympathetic irritation in the fellow eye, necessitating enucleation of the injured eye, and iridectomy in the fellow eye. Sight is so impaired that the man can not see to read, although he is able to pursue the business of a farmer.

Dr. JOHN L. MASTERS of Indianapolis, opened the discussion by calling attention to the great gravity of slight injuries where infection of the wound takes place. He pointed out the almost inevitable certainty of loss of sight in those eyes which are pierced by foreign bodies which can not be located and removed. He recited the case of a penetrating wound followed by absorption of the lens, in which good vision was ultimately obtained. Another case was cited, of a man shot in the face, destoying one eye, the other one being slightly injured. The destroyed eye was enucleated; there were no evidences of a foreign body in the other eye. In time it became irritable and cloudy; general treatment afforded temporary relief. Ophthalmoscopic examination showed a gray mass in the anterior portion of the choroid. Recurring attacks of dimness of sight, accompanied by irritation in the eye has been finally followed by cataract, and now there is bare perception of light. He thinks the cases recited by Dr. Reynolds are of great interest to every member of the profession, but they should be looked upon as extraordinary cases. They illustrate what may be accomplished when the foreign body can be removed from the eye.

Prof. P. RICHARD TAYLOR of Louisville, wished to emphasize the importance of the case recited by Dr. Reynolds, of the man whose eye was injured by the guncap as affording additional evidence of the unfavorable character of injuries of the ciliary muscle or ciliary body. Cicatricial formations in the ciliary muscle or body imprison the nerves and keep up a perpetual state of irritation and finally provoke the so-called sympathetic inflammation, followed by blindness.

Dr. Masters might have added to his list of dangerous wounds from penetrating bodies, a large class where the infecting material enters with the foreign body; the infection being thus carried directly into the eye, inflammation is excited at once. It is therefore not sufficient that the foreign body be located and removed, but we should be well assured that no infection has accompanied the injury, otherwise we should at once enucleate the eye, and save the patient a prolonged period of suffering and the dangers of constitional infection, which have occasionally been overlooked with fatal result to the patient.

Dr. ULRICH H. HON of Bloomington presented a specimen of uterine mole, or hydatiform degeneration in the chorion. The patient was suffering with hemorrhage, and had voided a large mass of this material. On examination a considerable amount of retained cystic matter was removed, and the hemorrhage ceased. There was more than enough to have filled a quart vessel. The condition, though rare, is sufficiently well known. The mass resembles a collection of hydatids, being made up of a minute series of spheroidal cysts, which are the degenerate remains of the villi of the chorion.

Dr. WM. V. MORGAN pointed out the fact that these remains are, in medico-legal cases, always accepted as the products of pregnancy.

Dr. WM. J. PURKHISER of Salem read a paper on

MEDICAL EXPERT WITNESSES AND EXPERT TESTIMONY.

He pointed out the lamentable fact that courts of justice sometimes accord the distinction of expert to a thoroughly incompetent medical witness, thus continuing to bring the profession into ridicule. He thinks a better knowledge of medical jurisprudence is necessary to the maintenance of the dignity of the profession in medico-legal inquiries.

Dr. DUDLEY S. REYNOLDS opened the discussion by pointing out the character of the preparation which the law requires of a medical expert witness. He maintains that medical jurisprudence is one of the most important subjects taught in the medical colleges, and that it is not sufficiently appreciated by many institutions. If the medical expert witness duly informs himself in relation to the subject about which he is going to testify, carefully avoiding any manifestation of bias in opinion, he may escape the suspicion of having a personal interest in the success of the party-litigant in whose interest he was summoned. It is not expected that every man knows everything, and the medical expert witness should not hesitate to express his ignorance about matters concerning which he is uninformed; but the court will not hold him guiltless if that ignorance includes any matter of general information in the profession.

Dr. B. MERRILL RICKETTS spoke of the treatment of the medical expert witness by expert lawyers, who never lose an opportunity to bring the medical profession into ridicule when this testimony is damaging to one side or the other. He has a habit of defending himself on the witness stand, and recently had occasion to say to the judge and counsel that they knew nothing of such matters as the shortening of a leg after fracture. He defended himself by showing the ridiculous character of the questions of the counsel, and demanded the right to make himself understood to the jury and court, in the definition of a difference in the results of injuries in the thigh bone of children and adults.

Prof. P. RICHARD TAYLOR, chairman of the nominating committee, reported as follows: For president, J. Garland Sherrill of Louisville; vice-president, Wm. D. Pennington of West Baden; secretary and treasurer, George W. Burton of Mitchell; corresponding secretary, Ulrich H. Hon of Bloomington.

Executive Committee: Dudley S. Reynolds, Louisville; B. Merrill Ricketts, Cincinnati; Elihu P. Easley, New Albany; Edmund D. Laughlin, Orleans; William V. Morgan, Indianapolis.

The special committee on necrology reported through its chairman, Dr. Askren, a series of resolutions on the deaths of ex-presidents Riorden of Bedford and Charlton of Seymour.

The committee on sanitation and State medicine, of which Dr. U. H. Hon was chairman, reported a series of resolutions which were adopted. The committee was continued, with instructions to secure suitable papers, from the best informed persons, for the purpose of elucidating the recent sanitary laws of Indiana, to be made the subject of special consideration at the next meeting.

The chairman of the executive committee was instructed to arrange suitable railway concessions for the next meeting of the Society.

On motion, the Society adjourned to meet at West Baden Springs, Dec. 28 and 29, 1897.

PRACTICAL NOTES.

A Remedy for a Form of Tinnitus Aurium.—Dr. F. Steiner (*Arch. f. klin. Med.*, lviii, 2, 3) in discoursing upon his conclusion that polyneuritis is a frequent complication of acute rheumatism, the basis being probably an epineuritis, recom-

mends the fluid extract of ergot as a remedy for the tinnitus aurium caused by the long continued use of sodii salicylate and potassii iodid.

The Treatment of Exophthalmic Goiter by Section of the Cervical Sympathetic.—Reclus and Faure (*Gaz. Hebd. de Méd. et de Chir.*, June 24, 1897, p. 592) have reported a case of exophthalmic goiter occurring in a woman in her third pregnancy and following emotional disturbance. Medical treatment had been without benefit and electricity brought only passing amelioration. The exophthalmos was so pronounced that the eyelids could not be closed and the corneæ had suffered from the want of protection. The thyroid gland was greatly enlarged; the pulse ranged between 120 and 130; and the constitutional disturbance was profound. The cervical sympathetic was readily resected on either side through an incision along the posterior border of the sterno-mastoid muscle and improvement speedily ensued. By the seventh day the exophthalmos had almost entirely disappeared and the ulceration of the cornea had cicatrized. The swelling of the neck had diminished; the pulse was reduced to 90; the trembling was less marked; and the general condition was greatly improved.

Surgical Treatment of Tumors and Enlargements of the Thyroid Gland.—Paul (*British Medical Journal*, July 3, 1897, p. 1) reports twelve cases of adenoma of the thyroid gland, five of parenchymatous goiter and six of exophthalmic goiter treated surgically, and details the histologic appearances found in the structures removed. In the first twelve cases tumors weighing up to three-quarters of a pound, and in the remainder portions of the gland, some of a very considerable size, were removed, without a fatality. Healing was rapid in all, only a few patients being under surgical treatment more than a fortnight. In six of the cases of adenoma there was complaint of constitutional symptoms, and in all of these young active gland-tissue was present; in the remaining six, symptoms of mechanical obstruction only were present. In the latter the tumor was very small, colloid, fibrous or almost entirely cystic, with little or no active secreting epithelium. The patients suffering from mechanical obstruction alone were entirely relieved by the operation, while those in which constitutional manifestations also were present were additionally relieved or very much improved in regard to these. Of the five cases of parenchymatous goiter sufficient time had elapsed after the operation in only two to permit of the expression of an opinion. The removal of one lobe was followed by atrophy of the other lobe, with the establishment of perfect health and freedom from symptoms of myxedema. The immediate effect of the operation in the cases of exophthalmic goiter consisted in a marked amelioration of all the symptoms. In some cases the first improvement was so decided as to appear remarkable and to leave no doubt as to its relation to removal of thyroid tissue. This early improvement may be followed by slow progress, so that several years must elapse before a final judgment could be given.

Successful Treatment of Internal Aneurysms with Injections of Solution of Gelatin.—Lancereaux has tried injecting 50 c.c. of a sterilized 1 per cent. solution of gelatin in a 1 per cent. salt solution at 37 degrees C., as Dastre announced in 1895 that a solution of gelatin injected into the veins of a dog renders the blood much more coagulable. Lancereaux reported at the Académie de Médecine (*Bulletin*, June 22), the one case in which he has tried this treatment. The patient was a man of 46 who had been affected with an aneurysm of the first part of the arch of the aorta for two years. It had become as large as the head of a child, 14 x 15 centimeters, and was rapidly increasing with distinct expansive pulsation; the accompanying oppression and pain, dyspnea, etc., were most distressing and the thinness of the wall showed that the aneurysm was on the point of bursting, when the injections of gelatin were made as a last resort. Twelve injections as above (January to May) relieved the patient of all his pain and reduced the size of the tumor 2 centimeters. It has grown firmer and the pulsation is no longer radiating but with the aortic current. He left the hospital to attend to his usual occupations, saved from certain death by this harmless and evidently efficient treatment, the only one known for internal deep aneurysms beyond the reach of surgical intervention. A slight redness at the spot of the injections in the gluteal region and a slight transient increase of temperature after the first injection were the only inconveniences.

Instrumental Evacuation of the Uterus.—Doléris has a comprehensive article in the *Journal de Méd. de Paris* of June 20, on the treatment of incomplete abortion. He states that instrumental evacuation of the uterus is neither a difficult nor dangerous operation, if it is performed with extreme gentleness and care, *without chloroform*, the bladder emptied first, using the fenestrated forceps, the swab and the curette as indicated, an attentive assistant pressing down the fundus, with repetition of the dilatation in the course of the operation and frequent intra-uterine and abdominal palpation, and the traction of the cervix with *three*-pronged forceps. He concludes by swabbing out the uterus with creosoted glycerin and a copious irrigation at 40 degrees with a dilating sound, finally packing it with iodoform gauze very slightly impregnated with creosoted glycerin at 5 per cent. (The gauze loses its absorbent powers if much impregnated, besides irritating the vaginal mucosa.) He renews the dressing every two or three days, with an intra-uterine irrigation each time. In 44 hospital cases of curetting the gravid uterus (33 post-abortum and 21 post-partum), he has had neither accidents nor death.

Cholecystitis Complicating Typhoid Fever.—Mason (*Boston Medical and Surgical Journal*, May 13, 1897, p. 449) has reported the case of a woman, 30 years old, who came under observation in the third week of an attack of typhoid fever, with dry brown tongue, palpable spleen, rose spots and distended abdomen. Anorexia, vomiting and constipation had been prominent symptoms. Widal's serum test yielded positive results. There was no leukocytosis. Toward the end of the third week the patient complained of increasing abdominal pain that became localized in the right hypochondrium, where a tumor four inches in diameter developed, extending from the costal border toward the umbilicus. The swelling was very tender, absolutely dull on percussion and descended on full inspiration. The patient presented appearances of collapse and it was feared that rupture of the gall bladder distended with pus would take place. Celiotomy being concluded to be too grave an operation to undertake under the circumstances, the gall bladder was tapped at a point an inch below the costal margin and four and a half inches from the umbilicus. Three and a half ounces of sero-purulent fluid were withdrawn, pale in color, looking more like urine than bile. The aspirating needle moved up and down with the action of the diaphragm. No gallstones could be felt with the point of the needle. After its withdrawal a pad and a swathe were applied to prevent the escape of septic fluid into the peritoneal cavity. The relief to pain was immediate. On the next day all of the urgent symptoms had disappeared and they did not return. The pulse fell from 140 to 120 and defervescence followed in five days. The gall bladder gradually retracted; convalescence ensued, and when the patient returned for observation after a month nothing abnormal was found in this region. Examination of the fluid removed disclosed the presence of microörganisms that yielded the various reactions of typhoid bacilli.

The Radical Cure of Hernia by Implantation of Sterilized Sponge.—As the result of experimental observations upon rabbits in the Physiological Laboratory of the Johns Hopkins University, Platt (Johns Hopkins *Bulletin*, March, 1897, p. 44) was led to attempt implantation of sections of sponge in the inguinal

canal for the purpose of forming a firm connective tissue barrier to the descent of the bowel and adnexa in the radical cure of hernia. In the actual application of the method an incision about two and a half inches long is made directly over the inguinal canal, following its course, the lower end extending about half an inch upon the scrotum. If the hernia is down the operation is so much the easier. The canal if laid freely open. The sac, whether congenital or acquired, is opened in its entire length, the hernial contents reduced and the sac cut away close to the ring if congenital, while if acquired it is cut square off after being ligated as high up as possible and dropped beneath the ring. In the case of the congenital sac it is often necessary to leave the thin inferior layer *in situ* and adherent to the cord. Next a section of fine firm surgical sponge is cut about an inch and a half in diameter and an eighth of an inch in thickness. This is sterilized without boiling by immersing in a solution of soda, washed in sterilized water, treated with potassium permanganate and oxalic acid and then thoroughly washed in sterile normal saline solution. A radical cut is made in the section. The constituents of the cord are gathered together as high up as possible and placed in the center of the section and at a right angle to it. The edges of the cut in the sponge are now overlapped slightly and two sutures are inserted into the sponge to keep it in place on the cord, which now pierces its center. The section of sponge is spread out beneath the internal ring and the conjoined tendon is sewed firmly by two or more quilted sutures to Poupart's ligament, using a needle in a handle. The inguinal canal is now snugly sewed up with silk sutures and over all the skin is sewed with silkworm gut. It is absolutely necessary to use some kind of drainage at the upper angle of the wound, as there is invariably some serous oozing and swelling. This may be removed in twenty-four hours. The patient is confined to bed upon his back for three weeks. If a boy, it is well to use the Bradford frame, to keep him from sitting up and twisting about in bed. The skin sutures are removed on the ninth or tenth day, the wound being treated on ordinary antiseptic principles. After three weeks the patient is permitted to sit up in bed for a day or two; then he sits up for two or three days in a chair, and afterward he goes about as usual. It is unnecessary to use any support over the site of operation beyond a light strip of gauze to protect the fresh cicatrix from friction.

The Bacteriology of the Follicular Enteritis of Children.—The *British Medical Journal* quotes an article by Dr. Finkelstein of Heubner's clinic, from the *Deutsche medicinische Wochenschrift*, regarding two forms of the gastro-intestinal enteritis of infants that appear to be due to an infection. The source of the contagion lies in the stools. Two groups of the disease are to be distinguished, the dysenteric and the toxic. The actual cause of the disease must therefore be able to give rise to irritation of the mucous membrane, and to produce toxic products. The bacteriologic examination of the purulent masses in the author's case showed the presence of abundant rod-like microörganisms contained in the pus cells, and varying much in appearance. Often they were arranged in twos. All the different forms were shown to belong to a single microorganism. By cultivation a microbe possessing extraordinary resemblance to the bacillus coli communis in almost pure culture was obtained. The author then details his inoculation experiments. In mice it produced, when introduced with the food, a disease very like Löffler's mouse typhoid. The morbid appearances corresponded exactly to those described by Heubner as taking place in the epithelium in cholera infantum, but ulcerative processes were absent. The microörganism is only present in the glands, and hence the death of the epithelium must be due to a toxic action. The bacillus is also able to produce remote toxic effects. Growth on potatoes showed differences from that of the bacillus coli, otherwise the differences were rather those of degree than kind. Experiments on animals yielded more important results. Virulent cultures of the bacillus coli were shown not to be able to act pathologically on healthy mucous membrane. A close relationship existed between the bacillus in question with the bacteria known to produce the manifestations in meat poisoning. Thus it does not appear correct to class this microörganism as the bacillus coli. The virulence of the microörganism varies greatly, and can be diminished by culture. As regards its pathogenic properties, it was found constantly present in over fifty cases of typical enteritis and colitis dysenterica. All cholera-like forms must not be grouped as follicular enteritis. If the microbe has lived and flourished in the milk consumed, the symptoms of intoxication may begin forthwith. It may be said that follicular enteritis passes through the stages of dyspepsia, intestinal catarrh, up to a cholera-like disease. When the intestinal epithelium is destroyed, the bacillus may get into the blood stream and produce a septicemia as well as hemorrhagic purulent metastases. Mixed infections are common. There are two forms of the general infection: one resembling typhoid, and the other giving rise to high fever, collapse and rapid death.

Partial Rupture of the Spinal Cord Without Fracture of the Spine.—Watts (*British Medical Journal*, March 13, 1897, p. 654) has reported the case of a man 65 years old, who while partly under the influence of alcohol fell from a cart that he was driving. He was able to arise and walk to his home, a distance of a mile, where he put his horse away and sat down in a chair by the fire. His neck felt a little stiff, but it was free from pain. Three hours from the time of the accident the man noticed that he had no power in his right hand, then that his left hand was paralyzed and then that he could not move his legs. The paralysis came on so rapidly that it seemed to affect all of the limbs almost simultaneously. When the patient came under observation, two days after the accident, the respiration was entirely diaphragmatic. He answered questions rationally and presented no cerebral symptoms. Movement of the neck caused pain, but there was none when the head was held still and none in the course of the nerves. There was no bruising of the skin and no irregularity of the spinous processes. The patient was able to raise his arms from his sides to a horizontal position and he could also move them across his chest. He could flex but not extend his forearms. He could make no movement of hands or fingers. The knee jerks and the plantar jerks were wanting. Sensation was lost upon the trunk and lower extremities below the level of the third costal cartilage; there was no hyperesthesia above this level. There was loss of sensation also on the anterior and posterior surfaces of the forearms on their inner halves, on the whole dorsum of the hands, on the inner part of the palms and on the palmar aspects of the little fingers. There was retention of urine and the bowels were constipated. The pulse was 56, full and regular. The temperature was subnormal. The urine contained a trace of albumin. No alteration in the extent of the paralysis or of the anesthesia was noticed and the patient's mind remained clear until his death, which took place twelve days after the accident from edema of the lungs. Upon postmortem examination the spinal dura mater was found to be torn transversely across in its left half and the cord beneath was likewise torn across for a corresponding extent. On anteroposterior section the cord was seen to be soft in consistence and grayish in color at the seat of rupture and for a half inch above the superior limits of the gray area being indistinctly defined by a somewhat irregular transverse line. This condition appeared to exist throughout the entire transverse extent of the cord. The rupture was seated exactly opposite the articulation between the sixth and seventh cervical vertebræ; a little movement was possible at this joint, but the posterior common ligament was intact and there was no evidence of fracture.

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It would greatly facilitate the prompt delivery of the JOURNAL to those members of the ASSOCIATION living in large cities, if they would kindly furnish this office with their street address in those cases where it is omitted from the wrapper of their JOURNAL, as we have been notified by the postmasters of the larger cities that second-class mail matter not having street address, would be placed in the general delivery to await call.

SATURDAY, JULY 31, 1897.

THE ANTIVIVISECTION BILL.

We notice that the esteemed Senator GALLINGER of New Hampshire is extremely anxious about his antivivisection bill. The following occurred on the presentation of the Memorial of the AMERICAN MEDICAL ASSOCIATION on the subject—*Congressional Record*, July 2, 1897:

Mr. COCKRELL. "I present resolutions unanimously adopted at the annual meeting of the AMERICAN MEDICAL ASSOCIATION in Philadelphia June 2, 1897, remonstrating against the passage of Senate bill No. 1063, for the further prevention of cruelty to animals in the District of Columbia. I ask that the Memorial lie on the table and that it be printed as a document."

The VICE-PRESIDENT. "Without objection, that will be the order."

Mr. GALLINGER. "I will inquire as to what is the Memorial particularly?"

Mr. COCKRELL. "They are resolutions opposing the vivisection bill reported by the Senator."

Mr. GALLINGER. "Resolutions adopted by a medical association?"

Mr. COCKRELL. "Adopted by the AMERICAN MEDICAL ASSOCIATION at Philadelphia."

Mr. GALLINGER. "In this connection I desire to state that I entered a mild protest a while ago against the printing of numerous documents relating to this one bill. We have, I think, four or five different documents already printed. Some of them are in severe and unjust criticism of the committee, stating absolute untruths regarding the action of the committee. I do not object to the printing of the Memorial, and yet it does seem to me rather strange that when a committee has considered a matter carefully, giving a long hearing to both sides, permitting the opponents of the bill to print 300 pages in the report of statements in opposition, that they should then flood the Senate with memorials, resolutions and protests, and that we should print them at the expense of the Government."

Mr. COCKRELL. "This Memorial consists of only two or three pages, and it is in appropriate form."

The VICE-PRESIDENT. "The Memorial will be printed as a document, in the absence of objection, and referred to the Committee on the District of Columbia."

It does not appear that there is need of any particular comment upon it, except to show the hostile attitude that the Senator has taken.

IDLENESS AND INSANITY IN PRISONS.

The following press dispatch tells a tale that perhaps deserves some editorial comment from a medical point of view:

New York, July 22.—Since the anticonvict labor law went into operation on January 1 twenty prisoners in the Kings county penitentiary have lost their reason. Madness began to assert itself without anything to attract public attention. It attacked the victims one at a time until last week, when nine convicts, under the dull torture of enforced idleness, went mad. Five of these unfortunate men were removed yesterday from the penitentiary to the State asylum at Matteawan. The remaining four will probably be disposed of today. Three are federal prisoners and their destination is the asylum at Washington. Madness in one case is laid at the door of mental torture, long sustained. In all the other cases enforced idleness—twenty hours of each day passed behind iron bars in trap-like cells—seems to give the explanation. The increase of lunacy as shown by figures among the male convicts is alarming. The records of 1890 show one case of lunacy; in 1891, three; in 1892, one; and for the three following years a total of four. Then prison work fell off and for the first seven months of 1896, a period corresponding to the time during which the anticonvict labor law has been in operation, nineteen prisoners lost their reason.

The prophecy was made when a similar measure was being pressed prohibiting convict labor in another State than New York, by the head of one of the chief penal institutions, that the result would be so large an increase of lunacy amongst the convicts that they might as well turn the prisons at once into asylums, only reserving a space for the necessary and inevitable preliminary lapse from reason to occur in. This was uttered as a rather forcible statement of the probable outcome of such a law as it appeared to him, but it is one that contained a large element of truth and only a moderate amount of exaggeration. Idleness and confinement would tax the resistance of an intellect that has abundant resources, and much more the untrained and more or less degenerate brain of the average prison inmate who has necessarily to be deprived to a large extent of the saving influences of companionship and association with his fellows. From a purely philanthropic point of view it is not a justifiable piece of legislation to enact laws that deprive men of their reason, and it may be a question whether if tested it might not come under the constitutional prohibition of cruel and unusual punishments. In case of prisoners convicted before the passage of such

acts, they constitute in spirit and in fact, if not in law, a most cruel and inhuman aggravation of the punishment to which they were sentenced.

There is an economic as well as a humane aspect in which the facts may be considered. Mental breakdowns under such conditions is not the most hopeful type of insanity and it promises to largely increase the burden upon the community. A convict may reform, many of them do to a certain degree, and make harmless if not very valuable members of society. It is the aim of philanthropists to bring this about and to make penitentiaries reformatories rather than places of vindictive punishment. If their function is to become manufactories of chronic dements it will be of very little advantage; the insanity added to the original evil tendencies will hardly make them any safer for the community while it will insure their becoming dependents upon the taxpayers. In no way it can be viewed is the anticonvict labor legislation advantageous or respectable.

It is probable that the labor unions and others who have favored these acts, gave very little attention to any possible consequences except the immediate results they had in view. It would not be creditable to them to suppose they would deliberately wish to condemn all convicts of all grades of guilt to a possible and even probable fate that is commonly described as almost or altogether worse than death, however true this may be, and yet this is just what they have practically done. It is useless to say that they can be employed without competition with outside labor, for if that were possible it would have been resorted to in the New York institution—it must be presumed that it was either impracticable or was made so by the wording of the law; no prison authorities would readily abandon their best resource for government as well as for profit in such institutions.

This is only one of many instances where inconsiderate law-making is done that ought to have been modified or avoided. If enlightened medical counsels could prevail, if medical men could take part in making our laws, or if something besides what is called practical politics could be more considered by our legislators, such a disgrace to the State as this inhuman and backward step in prison administration would have probably not occurred. It is not at all necessary that prison labor should injuriously compete with workers outside, but the outcry at the present time is too indiscriminating, and inconsiderate legislation is too often demanded with such results as are shown in the paragraph quoted.

THE NATURE, DIAGNOSIS AND TREATMENT OF COLLATERAL HEMIPLEGIA.

It is not our purpose here to dwell upon the diagnostic features of the various forms of paralysis of cerebral origin or upon the difficulties that not rarely attend their differentiation. We wish rather to refer to an interesting observation made by ORTNER (*Deutsche medicinische Wochenschrift*, June 10, 1897, p. 372), in connection with cases of hemiplegia in which palsy and cerebral lesion are on the same side of the body—collateral hemiplegia—in contradistinction from the cases in which the two are on opposite sides—contralateral hemiplegia—and which if verified will prove an exceedingly valuable aid in diagnosis, as well as an important guide in treatment.

LEDDERHOSE maintains that in cases of hemiplegia dilatation of one pupil, and more especially unilateral papillitis, upon the same side as the paralysis of the extremities is indicative of a lesion upon the same side of the brain. Both of these symptoms are, however, so uncommon under the conditions in hand that they are of little actual diagnostic aid. The peculiarity that ORTNER points out as distinctive of collateral hemiplegia consists in the manifestation of greater respiratory activity upon the side of the chest corresponding with that of the flaccid muscles than upon the opposite apparently unparalyzed side. In ordinary cases of contralateral hemiplegia this insufficiency of the respiratory muscles is noted upon the same side as the weakness of the extremities, or of the face and tongue, that is, that opposite to the seat of the lesion.

In explanation of the apparently paradoxic relation between the distribution of the paralysis and the seat of the lesion in the cases of collateral hemiplegia it has been suggested that there may be imperfect, or even total failure of, decussation of the pyramidal fibers in the medulla, but of this proof is yet wanting. It has also been thought that the result might represent the indirect influence of the affected hemisphere upon its uninjured fellow, but such a condition should then be common and attended with paralysis of both sides of the body, more pronounced upon that opposite to the situation of the lesion. A similar objection may be lodged against the view that the disturbance is a more general one, such as may result from diminished consistency or edema of the second half of the brain. That the palsy might be attributable to an undiscovered lesion in the opposite hemisphere seems in the highest degree improbable and it is not more likely that it owes its origin to representation of both sides of the body in the cortex of each hemisphere.

The most probable explanation is that which attributes the condition commonly to an extra-cerebral (meningeal), cortical or subcortical lesion, causing primarily general muscular resolution and secondarily irritation of the muscles upon the opposite side of the body. As a result we have a tonic state of the muscles upon this side and a flaccid state of those upon the other (same side as the lesion), without, however, interfering with the activity of the muscles of respiration upon the latter side. The most common condi-

tion that gives rise to this train of phenomena is hematoma of the dura or internal hemorrhagic pachymeningitis, of which the symptom under consideration may be considered in some degree diagnostic.

In a study of thirty-five cases of collateral hemiplegia it was found that the onset was attended with loss of consciousness in twenty-four; and of thirty-eight cases the lesion was situated in or adjacent to the cortex in twenty-six, the internal capsule and the fibers passing through it escaping in all. Of twenty-seven cases of intracranial lesion in or about the cortex, with hemiplegia upon the same side of the body, in not less than seventeen was the lesion extracerebral, and in thirteen of these it consisted of hematoma of the dura or hemorrhagic pachymeningitis. From these facts the conclusion seems justified that so-called collateral hemiplegia is a relatively common manifestation of either hematoma of the meninges or internal hemorrhagic pachymeningitis and the diagnosis of these hitherto obscure and latent conditions is facilitated by the recognition of apparent paralysis of the members of one side of the body with unimpaired respiratory activity upon the same side.

The state of the respiratory activity is also a diagnostic index in cases in which symptoms of bilateral cerebral irritation exists, as failure of this function upon one side under these circumstances is indicative of the existence of an intracranial lesion upon the opposite side, alone or at least in preponderant degree. The establishment of a correct diagnosis in some cases of the kind under consideration will suggest surgical intervention, with a reasonable prospect of finding the lesion, and in many instances also of successful removal of the source of irritation and paralysis, with consequent recovery and saving of life. ORTNER is able to report five cases in which a correct diagnosis was reached upon the basis of the phenomenon to which he has called especial attention.

THE EFFECTS OF THROMBOSIS AND EMBOLISM OF THE CORONARY ARTERIES.

Instances of thrombosis and embolism of the coronary arteries of the heart, the resultant functional disturbances of which can be carefully studied, are of great value and interest because of the light thus thrown upon the circulatory conditions in the myocardium of man. Such cases sometimes furnish conditions that may be said to correspond to circumstances produced by well planned physiological experiments.

A recent and instructive case of this kind is one of thrombotic occlusion of the main stem of the right, and embolic occlusion of the left, coronary arteries of the heart in a 32 year old man reported by CHIARI[1] of Prague.

The postmortem examination showed, as indicated, that the patient had died from complete occlusion of both the coronary arteries. The very beginning right coronary artery was occluded by a thrombus which had developed some days before death and which had been followed by myomalacic foci surrounded by beginning reactive changes. The left coronary artery was closed by the embolism of a fragment of the thrombus in the right coronary vessel. This embolism was the immediate cause of death. It occurred a few minutes before death and gave rise to a sudden collapse that lasted but a few minutes before the final stopping of the heart's beat. The cause of the thrombosis is referred by CHIARI to a, for such a young person, quite marked sclerosis of the beginning of the aorta and to the presence of a chronic nephritis. Of the cases in the literature that are in the main identical with this, CHIARI mentions those reported by HAMMER,[2] OESTREICH[3] and BARTH[4]. In OESTREICH'S case it concerns a 32 year old man that died suddenly. Above the orifice of the right coronary artery was a pedunculated thrombus attached to the wall of the aorta; this thrombus covered exactly the ostium of the artery. In the left coronary artery was a long, yellowish-gray embolus. BARTH'S case was one of occlusion of the opening of the right coronary artery by a thrombus in the corresponding sinus Valsalvæ due to a beginning sclerosis at this point. A but little advanced sclerosis in the beginning of the aorta may therefore give rise to very serious consequences on account of consecutive, thrombotic, coronary occlusion; most frequently the right coronary artery is the one affected; but in two cases at any rate, namely OESTREICH'S and CHIARI'S, the left coronary artery has been closed by a secondary embolism.

The important fact to be learned from the case reported by CHIARI is that rapidly developed complete occlusion of the main stem of the right coronary artery need not cause immediate death; the occlusion may be nearly or quite latent. CHIARI thinks that in this case the occlusion occurred about two days before death, because at that time an abnormal condition of the pulse had been observed. The thrombosis had caused numerous foci of softening in the myocardium but the right ventricle had not been completely deprived of nourishment because it had carried on its usual function. LANGER[5] showed by means of injection experiments that the two coronary arteries communicate with each other by branches that pass transversely across the anterior surface of the heart; furthermore that they anastomose through the vasa vasorum of the great vessels of the heart with the pericardial, the bronchial and even the diaphragmatic vessels. Hence the occlusion of the main trunk of one coronary artery does not deprive the entire cor-

[1] Prager Med. Wochenschrift, Nos. 6 and 7, 1897.

[2] Wien. Med. Wochenschr., 1878, No. 5.
[3] Deutsche Med. Wochenschr., 1896, No. 10.
[4] Deutsche Med. Wochenschr., 1896, No. 16.
[5] S. Ber. d. Ak. k. d. Wiss. in Wien., June, 1880.

responding vascular district of blood when the occlusion takes place gradually, as for instance, in case of uncomplicated sclerosis of the coronaries, then the collateral circulation may have time to develop to a considerable extent so that the disastrous consequences are in a measure warded off. The sudden occlusion of one or both main coronary trunks places greater demands upon the collateral circulation than can be met, and there may follow rather rapid suspension of the cardiac function. In HAMMER'S case the occlusion of the right coronay artery was followed by a condition of collapse that lasted thirty hours; the pulse was gradually reduced to eight beats in the minute; after the second sound came a distinct rumbling noise which HAMMER connected with the shaking up the diseased part as the healthy half contracted. In BARTH'S case, which was not observed clinically, death followed after the patient had been feeling ill for several hours. In OESTREICH'S case the occlusion of the right coronary artery was probably not complete, and this partial thrombus undoubtedly existed for some time without any symptoms. In CHIARI'S case the symptoms during the time that only the opening of right coronary was closed consisted in some slowing of the pulse, which was slow and arhythmic, small and weak.

Lastly, it may be well to indicate that the results of the observations concerning the occlusion of a coronary trunk in the heart of man do not correspond exactly with the results of experiments on animals,[6] and to emphasize that great care should always be used in the application of the results of animal experiments to human pathology.

ATHLETICS IN RELATION TO HEALTH AND LONGEVITY.

Of all the things that enter into our tastes and aptitudes, but few excite more interest at present in the community at large than that of athletic sport. The thing itself, eminently Anglo-Saxon, is not among the tastes of the average French youth, who at the age of 16 usually takes to cigarettes, absinthe and a mistress, while most of our boys at college, keenly devoted to athletics and outdoor games, are incurring the fears of over-anxious parents as to the doubtful, if not deleterious, effect of this agency of modern education, concerning which many errors still prevail. One of the more current of these is that athletes are subject to organic disease and die young.

Regarding the three different educations that we receive, namely, that of the family, that from our school masters, and that of the world, the authorities own that mere book learning in itself is of little consequence in determining one's place in life, when compared with the inestimable value of good family antecedents and training and the worldly attrition with well-chosen associates. With no intention to undervalue the worth of study and sound scholarship, most of us may recall the honor men of our school days, who have turned out to be mere prigs and book worms, while those who stood nearer the foot of the list have been the successful ones to whom life's prizes have fallen. To be sure, books have their use, but as a rebuke to mere bookishness there seems to be much significance in the remark of the late Professor HENRY of the Smithsonian Institution, regarding the agglomeration of medical books then in the Army Medical Museum, to the effect that it would be all the better for original research and the benefit of medicine, if some Calif OMAR would apply the torch and wipe out the whole collection. Of course this wholesale denunciation of books, when viewed with judicial calmness, is merely an enlightened common sense protest against these dumb teachers, which do less for practical education than well-regulated acquaintance and intercourse with men.

Our species being eminently gregarious, there is from a socialistic point of view no branch of education more valuable than the fellowship arising from the community of thought and feeling that obtains in all collections of young people engaged in outdoor games or athletics. Notwithstanding the acknowledged good of such recreations by historians and philosophers since the days of HIPPOCRATES, many popular fallacies yet prevail even among medical men, as to the effect of physical training and its bearing on health and longevity, and it would be difficult to equal the distortion of facts and temerity of language put forward in certain quarters in the howl against present day athleticism. Most of the published opinions that go to make up the popular notion relatively thereto, have emanated either from physicians having no practical acquaintance with athletics, or from sporting men who knew nothing of medicine.

Truth, as usual in such matters, lies between the two extremes. While a few exceptional cases break down and die young, it is now a well-ascertained fact that the beneficial effects of training and exercise tend to the benefit of the greater number by increasing health and longevity. The contention of this thesis was established in a paper embodying the experience of thirty years, read before the AMERICAN MEDICAL ASSOCIATION in Cincinnati, in which were cited many examples of athletes who lived to a hale and hearty old age.[1] The numerous macrobiotic instances therein cited are not open to the objection of being exceptional, since the writer's information and views have been supplemented by other observers in the same line, notably by JOHN BOYLE O'REILLY in his book about boxers; by the researches of Dr. J. MADISON TAYLOR of Phil[illegible]del-

[6] Samuelson, Zeits. f. kl. Med. ii. B., 1880; Cohnheim, Virch. Arch., B. 85, 1881; Von Frey, Zeits. f. kl. Med., B. xxv., 1894.

[1] Popular Fallacies Regarding Athletes and Athletic Exercises. Journ. Amer. Med. Assn., Apr. 27, 1889.

phia (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1892, xviii, 705-710), who arrives at the same conclusions; by Dr. B. W. RICHARDSON of London, who, though disposed to condemn excessive athletics, concluded one of his last lectures at Oxford by saying that "good active sports and exercise in reason are amongst the clearest means of maintaining a long and happy life;" and last but not least, by the admirable essay of Sir MORRELL MACKENZIE, who ridiculed the sweeping statements that are still made from time to time as to the ruinous effects of exercise and training on the majority of those who find pleasure in the use and development of the strength with which nature has endowed them. In addition to the instances cited by these writers, others have appeared from time to time in the public prints. The former champion of the prize ring of England, JOHN GULLY, grandfather of the present speaker of the House of Commons, died at 80, and within the last few weeks the celebrated wrestler, MARSEILLE, whose prowess was witnessed years ago by many French grandfathers at country fairs, departed this life with the record of an octogenarian.

As an offset to the foregoing instances, we are often confronted with vague statements relating to the untimely death of several notables who have figured in the athletic world for the last twenty years or so; but in nearly every instance, as far as can be ascertained, the cause of break down was owing to immoderate indulgence, or the neglect of simple hygienic rules, resulting in such specific trouble as alcoholism, cirrhosis of the liver, or venereal disease. Dr. SARGENT of Harvard says from extensive personal knowledge he thinks the early demise of athletes directly attributable to free indulgence of gross appetites and passions and not to the result of athletic work.

We need only refer, in conclusion, to the accurate statistics collected by competent authorities, and to elaborate actuarial calculations, which demonstrate that oarsmen have in point of fact a longer expectation of life than others, and that the alleged baneful effects of boat racing are absurdly exaggerated. So prone, indeed, are the opponents of athletics to be blinded by prejudice, that these statistics have been abused even to the extent of quoting them as proof of the disastrous consequences, as we once heard a medical man do who, in citing the figures of Dr. MORGAN'S accurate investigation, mentioned the "seventeen" victims, but said not a word about the remaining *two hundred and seventy-seven.* The mistake of mourning over one broken-down athlete and refusing to be comforted by the thought of a hundred others who were benefited by physical training, finds its counterpart in the denunciation of swimming by certain people who say that good swimmers are sometimes drowned, yet they totally ignore the hundreds who escape drowning from knowing how to swim.

Writing with the authority of experience and the maturity of observation, we therefore have forced upon us the induction that no good reason exists for the wholesale condemnation of athletism. On the contrary, it is evident that the healthy exercise of the physical powers is one of the necessary pastimes of a manly and vigorous race, and that next to food and sleep athletics has the largest share in the recreation of human life and in counteracting the tendencies of this hyper-neurotic age.

UNITED STATES COURTS VS. POST OFFICE AUTHORITIES ON ABORTIFACIENT NOSTRUMS.

There is a decided conflict between the United States courts and the United States post office as to the status of abortifacient nostrums. According to a recent decision in Judge SEAMAN'S court, the United States Courts will enforce contracts for the sale of abortifacient remedies which are not permitted in the mails. The nostrum involved in the decision has been extensively advertised in the lay press as well as in the homeopathic journals as a "preventive of conception and a regulator of menstruation." In the case in which Judge SEAMAN'S court rendered judgment the manufacturer of this nostrum was sued for violation of contract by a woman who had obtained certain territory in southern Indiana. She asserted that after she had worked up a good trade in this territory, the manufacturers filled orders in it without paying the commission, and her claim was based on this alleged fact. As the territory involved is largely a rural one, the dangers to the health of both mothers and children can not well be over-estimated. If the ordinary theory of law be correct, contracts to perform illegal acts such as the sale of this nostrum, are null and void. It can not be pleaded in the present instance that there is no evidence tending to show that the nostrum was of the character described. The United States post office authorities have already excluded it from the mails. It would therefore be no arrogation of authority for the United States district attorney to ask that the case be thrown out of court on the ground that the enforcement of the contract is against public welfare. As the Milwaukee Medical Society is in the court district and as the case will probably be appealed, that Society could render a great service to itself, to the local profession, to the profession and people of the United States, by inducing the local district attorney to do his duty. In this way the Milwaukee Medical Society could teach certain nostrum venders a very telling lesson.

CONCERNING THE EDITORIAL MANAGEMENT.

We clip the following from "A Journal of Reform and Progress in the Medical Sciences," under the

head of "current comment." The truth is that every article connected with, or relating to the Ophthalmic Section that has appeared in the JOURNAL in the last three or four years, has been written by some member of the Section, and if our esteemed contemporary will re-read that "memorable diatribe" to which he refers, he will see there is nothing in it objectionable to the Section as a body, nor has anything of the kind ever appeared in the pages of the JOURNAL.

"There has been a revival of generous proportions in the editorial rooms of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and the Spirit has warmed the hearts of the special editorial writers since that memorable diatribe against the Ophthalmic Section of the National ASSOCIATION. The current issue of the JOURNAL goes out of its way to praise the Section quite as much as, a short time ago, it abused it. The JOURNAL has a large safety valve—praiseworthy editorials are by the editor, objectionable ones are by a special collaborator whose name it is not considered desirable to mention."

THE NEW SPELLING.

In answer to a valued contributor who objected to dropping the final "al" from the words physiologic*al* and biologic*al*, the Editor recently wrote:

"In regard to request for change of spelling I have to say that the JOURNAL long ago adopted the recommendation of the American Association for the Advancement of Science. However, your reprint will appear spelled as you wish. I quite sympathize with your feeling in the matter, but I suppose that our ancestors—some of them at least—raised a protest when the word 'arme' had the final 'e' dropped; the word 'legge' lost one 'g' and one 'e'; when the word 'thighe' lost its final 'e.' These happen to occur to me as I sit here, as specimens of how our language has grown by excision."

We print this because of other protests of the same character; in Vol. XXII, p. 25 will be found more specimens of the same sort.

CORRESPONDENCE.

The Section on the Practice of Medicine at the Late Meeting of the Association.

BUFFALO, N. Y., July 26, 1897.

To the Editor:—Your editorial in the JOURNAL of July 3, entitled "The Late Meeting of the Ophthalmic Section of the AMERICAN MEDICAL ASSOCIATION," must have attracted the attention of all your readers. The ASSOCIATION meeting was so notable in all respects that there may be danger of losing sight of the great excellence of the work in the various Sections.

It may not be out of place to emphasize once more the high estimate universally expressed of the work done in the Section on the Practice of Medicine. Knowing from experience how difficult it is to arrange a program satisfactory to all of a large body of physicians, the list of papers read and the discussions brought out are recalled not only with gratification but a certain amount of wonder.

It ought not to be necessary to reiterate the titles of papers nor to point out the wide range of subjects covered. It must be a satisfaction to remember that all parts of the country contributed and on adjournment the members separated with increased feelings of mutual respect. The suggestion is ventured that this program be preserved as a model for Dr. John H. Musser's successors in office. Very respectfully yours,

CHAS. G. STOCKTON, M.D.

PUBLIC HEALTH.

Thyroid Gland Extract as a Galactogogue.—The *Inter-colonial Medical Journal* of Australia contains, among other papers, an interesting communication by Dr. R. R. Stawell upon this subject. The value of a reliable medicine that would promote the secretion of milk would be immense, so that Dr. Stawell's results will have an interest for many practitioners. He details only nine cases, and, while admitting that this is but small clinical experience from which to generalise, concludes with some reservations that extract of thyroid gland is an efficient galactogogue. The dose given was from three to five tablets per diem. In view of Dr. Stawell's results we think that medical men are justified in giving the treatment a trial.

Detection of "Preservatives."—The use of preservatives in milk and butter has increased very largely during the last few years, in fact, during the summer months the practice of adding a preservative to milk may be said to be general. The preservative which finds most favor with the milk trade, is that known as "formalin," a more or less strong solution of formic aldehyde. Boric acid, borax, or a mixture of the two, are occasionally used for milk, and very largely for butter. From the public health point of view, this question of the addition of preservatives is most important. Whether or not such substances, in the quantities usually added to food, are injurious to health is still considered to be unsettled; but there can be no doubt that under the "Sale of Food Drugs Acts," the purchaser has a right to demand that the articles so doctored shall be labeled as containing a foreign ingredient. A very delicate method for detecting "formalin" in milk is O. Hehner's test, which consists in diluting the milk with its own volume of water, and carefully floating it over a little concentrated sulphuric acid, containing a few drops of ferric chlorid solution, contained in a test tube. In the presence of formalin a violet ring develops at the junction of the two liquids. This color is permanent for several days, if care be taken to prevent the tube being shaken. Carried out in this way one part of formalin can readily be detected in 200,000 parts of milk. In the absence of formalin, a brownish-red color develops, after some hours, not at the junction of the two liquids, but lower down in the acid.—*Public Health* (London), March.

Ptomain Poisoning by Pork.—Dr. Wynter Blyth reports, in the *London Sanitary Chronicle*, the cases of a boy and girl, aged respectively 11 and 5 years, who were brought to death's door by the ingestion of boiled pork, on a Saturday (March 27). Forty-eight hours later, the father, the boy and the girl were seized with choleraic symptoms, and at 2:30 on Monday afternoon the mother became similarly affected, but in a lesser degree. At 11 A.M. of that day, the boy and the girl had high temperature, the father choleraic symptoms, cramp, numbness of the feet and hands, and smarting of the eyes. The father, the mother, and the boy got better by about Tuesday, but the girl by Wednesday morning was almost pulseless, with cold extremities, and very nearly died. She, however, revived, and ultimately recovered. The pork was examined by the medical officer of health on April 1, on Wednesday, that is, four days after it was bought, three days after it had been boiled. At that date its appearance and odor were perfectly normal, but on passing it through a small sausage machine the finely divided fiber had a distinct stale smell. The pork was analyzed by Gautier's process, and ultimately a crystalline substance not in normal pork was separated. This substance was alkaline in reaction, gave fine crystals when united with hydrochloric acid, and

precipitates with the ordinary alkaloidal reagents (save the chlorids of gold or platinum). So small a quantity was, however, obtained, that it was not practicable to examine it farther or to determine whether the substance was really a poisonous "ptomain," although this is naturally the inference. It may be suggested that the ptomain was in quantity in the meat on Sunday, and what the writer found was a small residue which had escaped destruction in the process of putrefaction.

Reforms for Hospitals and Reformatories.—The "Greater New York" has many unanticipated problems to solve, some of which belong to the semi-penal institutions, where poverty is a non-recognized crime. The New York State Board of Charities not long ago received a report on the condition of the Kings County Hospital, showing insufficient accommodations and not enough of restrictions in the admission of inmates. This hospital combines what in the city of New York itself would be divided up into the workhouse and almshouse, hospital and places for acute cases. It is astonishing, says the report, to find that any of the work is well done in this overcrowded, improperly equipped and ill-constructed hospital for the poor of one of the largest cities of the world. The Board has also received the report of the inspectors of the various reformatories in the State. The House of Refuge on Randall's Island is found in good condition and neatly kept. "We earnestly recommend," the report says, "the separation and the removal of the girls' department from that of the boys' in this institution. This evil in the development of our juvenile reformatory system is so patent and embarrassing that this committee urges positive and immediate action on the part of the Board to initiate this separation." The same recommendation is made in the case of the Rochester State Industrial School. Much serious comment is likewise made upon the reformatory system of the "Excelsior" State particularly in its dealings with juveniles, classed as first offenders. The Board holds that the present system is making more real criminals than it reforms. In the case of juveniles, male and female, especially under 16, commitments should be made directly to the reformatory as a guardian rather than as a penal institution. This course is followed in France, and none of the juveniles sent to reformatory or correctional institutions of that country are committed as convicted of a felony, but as a precautionary measure. The root of the evils in question is not so much with the hard-working officials and a hampered medical profession, but with so-called "statesmen" and pretended political economists. Public weal is one matter—appointments quite another. Between the trades unions and the tax-payers the honest humanitarians have but little consideration.

The Duality of Vital Statistics.—Vital statistics are as a barometer in which the sanitarian sees indexed the sanitary necessities of any locality, and traces its accordance or otherwise with those laws of health by which its death rate is either diminished or increased. Every one is aware of the *wonderful duality of statistics* and how they can be used and mixed by a skilful hand so as to furnish materials for any taste, and to prop up any shaky theory. Appealed to in evidence of conclusions thoroughly diverse, they often remind one of Meyrick's story of the chameleon, anent the description of which the two travelers so materially differed—the one asserting that its color was green, while the other swore it was blue. The umpire called in to decide pronounced it black as jet, and the beast itself, when produced, was found white as snow. So is it that statistics are appealed to for every purpose, and are often in the hands of party advocates or prejudiced opponents little better than a pack of cards in the hands of a skilful conjuror. Still, statistics can not be set aside or unduly underrated. Those vital statistics which it is the registrar's duty to collect are of such a nature as not to be capable of easy distortion. Each locality or district can separate them for itself, and learn those special lessons which they are fitted to convey. To show the practical use to which these statistics may be put, take the system originated many years ago in Leith, and now in force in Glasgow. The city is divided into a number of what might be called sanitary districts, each registrar supplies the sanitary authorities with a return showing every birth and death in each street; these figures are tabulated, and by a little comparison the undue mortality of any place within the districts is authoritatively ascertained, the causes of death enumerated, and other information bearing upon the health of the city indicated. Such a course is evidently approved by the framers of the new Public Health (Scotland) Bill, as there appears a clause providing that every registrar shall send a return of the deaths in his district to the medical officer of health, although the payment indicated in the bill is quite inadequate. However advantageous to the general work of sanitary reform may be the results of registration as embodied in the publications of the registrar-general, it must be evident that for local application they require to be more fully and minutely analyzed. Some physiognomists, it is said, derive their chief pleasure from the examination, not of the more prominent features of the human countenance, but of the minute lines, curves, and wrinkles such as escape the notice of the general observer. Public money invested in the direction of obtaining these statistics is advantageously invested, and ought not therefore to be stingily applied. The public reap the benefit in that improved sanitary condition which throws a lifeguard round their homes, promotes their daily comfort, drains the prolific sources of disease, and robs the epidemic of its deadly strength. Public authorities may expend much labor and means in seeking to promote the social and sanitary well-being of their constituents, but without some intelligible basis from which to start, and some reliable data to direct, they can not be expected to attain commensurate results. Those who, from their position are qualified to aid them in their urgently important work ought to be dealt with in a spirit of liberality, indicating, on the one hand, their earnestness of purpose, and ensuring on the other hand, that the best thing being done in the best way will produce the best and most enduring results. Such an onerous and responsible position is held by every registrar in Scotland, and particularly by those called upon to act in the leading centers of population, but the recognition of this fact by local authorities is the exception and not the rule. Looking to the remuneration of other public officials who are not burdened with a tithe of the registrar's responsibilities, nor surrounded by any statutory civil and criminal penalties, it must be admitted that the provision made for registrars is most inadequate.—Mr. John Archer in *Sanitary Journal* for April.

European Sanitaria for the Treatment of Tuberculosis.—Dr. Kaurin of Christiania, Norway, has published in *Lagwidenskaben* the results of his observations concerning the tuberculosis retreats on the continent. In Switzerland he visited Heiligenschwendi, in the Canton of Bern, 1,100 meters above the level of the sea. It is also surrounded by forests and faces toward the south. The climate here is more severe; in winter the thermometer descended to −37 degrees C., and in June the maximum temperature is +15 and minimum +7 degrees C. The treatment employed was hygienic-dietetic and was followed by good results. In the Canton of Graubunden he visited Davos, an Alpine valley, situated 1,560 meters above the level of the sea. The two small villages there are now yearly visited by more than thirteen thousand people having tuberculosis. The mean temperature is +2.6 degrees C., and the mean barometric measurement 631 mm. The snow covers the fields until May and +20 to +30 degrees C. is frequently recorded. From so severe a climate the patients return home much improved in health. In spite of the elevation, there

seems not to be any disposition to hemoptysis; whereas it is contraindicated to send patients up there with developed anemia, neurasthenia, heart or laryngeal affections. Here in Davos there is a very peculiar institution, a school sanitarium for boys and girls sent by families disposed to tuberculosis, or with incipient phthisis. Boys and girls with poor health are sent up there also, and healthy children from the neighborhood frequent the same school. From Switzerland the author visited some places farther north in Sudeter Mountains and praises Gobersdorf, which is situated 560 meters above the level of the sea. Here, as in Davos, the patients with fever are kept out in the fresh air, and with good effect. Here, also, as in other places, 24 per cent. are cured. In the suburbs of Berlin he visited the barracks of Doeckert, situated in a large pine grove and given up to the Red Cross Society, for the benefit of tuberculous people. The cost per day is three marks per capita. Here, as well as in Malchow and Blankenfeldt, are two hospitals for tuberculous patients from Berlin hospitals, and situated on the plains irrigated by the Berlin sewers. The result is very satisfactory. In Malchow and Blankenfeldt the cost per day is only two marks and the treatment does not last more than forty-four days. Even if not cured in this short time the patients go back to their homes in the city improved in health and trained to a better mode of living. The celebrated establishment at Falkenstein in Nassau, of which Dr. Dettweiler is the director, is situated 400 meters above the level of the sea, surrounded by extensive forests on the southern slope of Taunus Heights. Not far away is Ruppertshain, a sanitarium for a poorer class of people, costing from two and a half to five marks a day. The climate is dry and a little windy, with a good deal of rain in spring and fall; in the winter the thermometer falls below the freezing point, generally to 8 or 10 degrees Celsius, and a little snow falls. The temperature changes slowly. The buildings are three stories, with corridors for patients on the front—open but protected with canvas against rain and direct sunshine. The regular treatment, lasting three months only, is based on the Bremer-Dettweiler method, the open-air treatment, the treatment in the corridors, and abundant nourishment, with regular exercise to strengthen the heart, and the disinfection of the sputa. Medicine is not much used; mostly to relieve symptoms. The result is very satisfactory, the percentage of cured being 24 (13 per cent. entirely cured and 11 per cent. able to resume work). Of 99 cured, 72 remained well for three to nine years after treatment, 15 had a relapse, and of those 12 were again cured after a renewal of the treatment. The little village, Falkenstein, close by, with 800 inhabitants, seems not to suffer from this so-much dreaded neighborhood, inasmuch as the death rate from tuberculosis here is less now than formerly.

BOOK NOTICES.

The Menopause; a Consideration of the Phenomena which Occur to Women at the Close of the Child-bearing Period, with Incidental Allusions to their Relationship to Menstruation; also a Particular Consideration of the Premature (especially the Artificial) Menopause. By ANDREW F. CURRIER, M.D. Cl. 8vo. pp. 309. New York: D. Appleton & Co., 1897. From A. C. McClurg & Co., Chicago.

This book is not only entertaining from a literary standpoint, but it is meritorious from a professional point of view.

The author's chapter on the artificial menopause is interesting, but rather disappointing. Surely there must be sufficient experience in the after-effects of ovarian and tubal extirpations, to say nothing of hysterectomies, to have made more definite statements and more extensive observations. One must admit the truth of what the author says, but there is much more to be gathered.

The general trend of the book is to combat the view that the period of the menopause is a period fraught with danger. On the contrary, that period should be considered as a physiologic process and be passed with as little pathologic sequence as the menstrual period came on. The book is on a very practical topic and we are sure it will be well received.

A Short Practice of Midwifery, Embodying the Treatment Adopted in the Rotunda Hospital, Dublin. By HENRY JELLETT, B.A., M.D., etc., with a preface by W. J. SMYLY, M.D., late Master of the Rotunda Hospital. With forty-five illustrations and an appendix containing the statistics of the Hospital for the last seven years. pp. 323. Philadelphia. 1897. Price $1.75.

This little volume will prove acceptable not only to those who desire a brief account of the practice of the great Rotunda Hospital, but to those interested in keeping pace with the progress of modern midwifery. Aseptic methods are taught and we regard the work as an excellent epitome and well worth careful study by students everywhere.

Crime and Criminals. By J. SANDERSON CHRISTISON, M.D. Chicago: The W. T. Keener Co. 1897.

This is very evidently not a systematic treatise on criminology, as the author admits. It is only some brief sketches, mostly of a few not uncommon or specially prominent types of criminal defectives. It is popularly rather than scientifically written, and the author states in his preface that the work is largely a reproduction of newspaper articles which, it would appear from his preface, have aroused attention both in Europe and America. He has therefore collected them and published them, with some additions, in book form for the benefit of the public.

While the style of the book is generally readable, the author would have done well had he revised it more carefully in some parts. The publishers have done their work well; the make-up, illustrations, etc., are very good.

ASSOCIATION NEWS.

Committee on Transportation.—*To the Editor:*—The committee on rates to Denver in 1898 has been appointed by President Sternberg as follows: Dr. W. H. Daly, Pittsburg, Pa., chairman; Wm. Pepper, Philadelphia, Pa.; X. C. Scott, Cleveland, Ohio; J. D. Griffith, Kansas City, Mo.; C. M. Drake, Atlanta, Ga.; L. H. Montgomery, Chicago, Ill.; H. O. Marcy, Boston, Mass.; J. W. Graham, Denver, Colo. The President says: Dr. Daly writes me that the committee is already industriously at work and that a rate of one-half and thirty days time seems to be the certain outcome of their labors."

Yours very truly,

W. B. ATKINSON, M.D.

Section on Ophthalmology.—Members of the Section on Ophthalmology, and others interested, who have not already subscribed for the bound volume of the proceedings of that Section for 1897, may obtain a copy when issued by sending name and addres and $1 to the JOURNAL office, or to Horace M. Starkey, 70 State St., Chicago. These orders should be sent in within the next two weeks.

SOCIETY NEWS.

Indian Territory Medical Association.—At the regular semi-annual meeting of the Indian Territory Medical Association held at South McAlester, I. T., June 29 and 30, 1897, the following officers were elected for the ensuing year: President, E. N. Allen, M.D., South McAlester; first vice-president, G. W. West, M.D. Eufala; second vice president, J. B. Roleter, M.D., Oklahoma City; secretary, LeRoy Long, M.D., Caddo.

New Jersey Medical Examiners.—The annual meeting of the State Board of Medical Examiners of New Jersey was held at Jersey City, Monday, July 5. Dr. George F. Wilbur of As-

bury Pa- ...lected president; Dr. E. L. B. Godfrey of Cam- ...etary, and Dr. A. Uebelacker of Morristown, tr... There were sixty-eight candidates who reported for ...e examination, of whom 12 per cent. were rejected.

French Congress of Surgery, to be held at Paris, October 18, will discuss the questions of "Contusions of the Abdomen" and "Indications for an Operation and Treatment of Cancer of the Rectum." Sec. L. Picque, Rue de l'Isly 8, Paris.

Twelfth International Medical Congress.—*To the Editor:*—In a letter dated July 7 Dr. H. Kümmell, surgical director of the New General Hospital (Neues Allgemeines Krankenhaus) of Hamburg, in the names both of the local Hamburg and the General Imperial Committees of the Twelfth International Congress, begs to invite American Congressists to inspect the hospital and the new hygienic establishments. The medical men will be at the hospital daily from 10 A.M. to 2 P.M.; still they request American Congressists to kindly notify them, if possible, of the days of their intended visits. Very respectfully.

New York, July 19, 1897. A. JACOBI.

Mississippi Valley Medical Association.—Meeting at Louisville Oct. 5, 6, 7, 8, 1897. The Executive Committee met recently at Louisville, in conjunction with the local Committee of Arrangements, the following being present: Drs. Stucky, Grant, Mathews, Love, Holloway and Reynolds. It was determined to make the coming meeting the largest and best in the history of the Association, and everything points to a fulfillment of this endeavor. The railroads will make a round-trip rate of one and a third fare, or probably one fare. The address on surgery will be delivered by Dr. J. B. Murphy, Chicago; the address on medicine by Dr. John V. Shoemaker, Philadelphia. Title of papers should be sent to Dr. H. W. Loeb, Secretary, St. Louis, Mo.

The Neuron at the German Congress of Internal Medicine.—Goldscheider remarked in his address that we assume now that each neuron with its axis cylinder and dendrites is a functional and nutritive unit, communicating by contact alone with the rest, but if a sufficiently powerful stimulus is applied, it will be transmitted like a wave, entirely around the whole of the central nervous system, preferably following the routes offering the least resistance. Each neuron has an individual standard of excitability—a limit that must be passed before it shows the effect of the excitation. This limit varies under different conditions. Slight excitation increases the excitability of the neurons, but violent excitation decreases it and is followed by hypo-esthesia of a whole region. Such a condition exists in hysteria, while on the other hand, neuralgia and the tachycardia accompanying neuralgia, produce a hyperexcitability. The same stimulus in these conditions produces a much more intense excitation than in normal. Psychic conditions also affect it. These variations in the standard of excitability of the neurons must be borne in mind in organic diseases of the nervous system, in which the lesion does not account for all the phenomena observed. In tabes, for instance, we do not know whether the lightning pains precede the establishment of the lesion, or whether the subjective troubles are caused by it. Substitutions and compensations are accomplished by an increase in the faculties of hitherto inactive neurons. We know that stimulation of certain portions of the skin will affect the viscera, showing a connection between the cutaneous sensory neurons and the sympathetic neurons. The effect on the brain during sleep, of the stomach and intestine loaded with food, can be compared to the effects of cutaneous pruritus. Therapeutics must not be restricted to remedy the anemia or hyperemia of the nervous elements, but also aim to affect the irritability of the neurons. In case of hyperalgesia of one member, for example, the pain can be reduced by acting upon the neurons of the symmetric member; electrization, for instance, will increase the excitability of the neurons, while massage and hydrotherapy may divert and thus reduce it. These measures open or close the road to excitation. The stimulus of cold or hot baths removes the sensation of fatigue. Various measures can be used to assist the will, too weak to determine alone a motor action. Suggestion, for instance, which can be considered an excitant of the neurons. Thermic influences also have an incontestable effect on the vasomotor and trophic neurons. Even in certain degenerative processes dynamic action on the neurons may have a useful therapeutic effect. The assumption of a dilation or contraction of the blood vessels is not an adequate explanation of the effects of thermic stimulation. The entire nerve substance is affected in a certain measure by its exciting effect on the trophic neurons. He advocated in conclusion "dietetics of the neurons" as more effectual than all pharmaceutic means in progressive degenerative conditions of the nervous system. M. Sternberg of Vienna added that the standard of excitability in the individual neuron (the *Neuronschwelle*), is the result of the equilibrium between the force applied and the resistance, and is therefore necessarily variable. "We have been concentrating our attention on the study of degenerative processes in the nerves, but in nature everything is not always either *black* or *white*. There are intermediate stages, which have not yet been sufficiently studied."

NECROLOGY.

JAMES S. WHITMIRE, Metamora, Ill., who died July 15 (*vide* JOURNAL, p. 200) received the degree of M.D. from the Medical Department of Illinois College in 1847. He afterward studied in Rush Medical College and while there was awarded the first *ad eundem* degree ever conferred by that college, his thesis embodying investigations made by him concerning iodin as an antidote to rattlesnake venom. In 1856 he also received the degree of M.D. from Jefferson Medical College. As surgeon of the Fifty-sixth Illinois Volunteer Infantry, with rank of Major, he participated in the battles of Iuka, Miss., and of Corinth, and after the latter had the reputation of performing the only successful hip operation (performed on a Confederate soldier) that had been done in the Western Department up to that time. Dr. Whitmire was the first to use a 6 per cent. solution of carbolic acid as a subcutaneous injection in erysipelas. (Reprint from "Physicians and Surgeons of America.") He had been a member of the Illinois State Medical Society since 1850; helped organize the Woodford County Medical Society; and was a member of the N. C. Illinois Medical Association and the AMERICAN MEDICAL ASSOCIATION.

DELOS A. CRANE, M.D., at Holland Patent, N. Y., July 22, aged 76 years. He was a graduate of Castleton Medical College, Vermont, class of 1844; was well known in Oneida County, and up to his death was a special Pension Examiner from the date of his appointment in 1865.

WILLIAM H. MCNAUGHTON, M.D., for two years Health Officer of Watervliet, N. Y., July 22, from consumption, aged 34 years.

EDWARD M. HIGGINS, M.D., Hot Springs, Ark., July 18, from apoplexy, aged 43 years. He received his medical degree in 1877 from Queen's University, Kingston, Ontario, of which city his father is a resident, and there Dr. Higgins was spending his vacation.

WILLIAM C. WEST, M.D., Geneseo, Ill., died at his home July 10, 1897, of suppurative pancreatitis. Dr. West was born in Maryland Feb. 27, 1835, and had been an active practitioner for thirty-four years, having been graduated from the College of Physicians and Surgeons of Keokuk, Iowa, 1863. He was a member of the AMERICAN MEDICAL ASSOCIATION, of the Illinois State Medical Society, and for a number of years a leading member of the American Microscopical Society. His remains were taken to Monroe, Mich., for burial.

RESOLUTIONS ON THE DEATH OF DR. BERGER.—At a regular meeting of the Alumni Association of the University Medical

College, Kansas City, Mo., held on Monday, July 12, 1897, the following resolutions were unanimously adopted:

WHEREAS, it has pleased the Almighty Providence to remove from among us by the act of a cowardly assassin, our honored and beloved friend and teacher, Dr. Lyman A. Berger, be it

Resolved, That his untimely death in the prime of professional life and usefulness, fills our hearts with deepest sorrow, and has created a lamentable vacancy in our faculty.

Resolved, That in the demise of Dr. Lyman A. Berger our profession has lost a trusted member and a zealous and valued colleague, and our Alma Mater a faithful and kind hearted friend.

Resolved, That his efforts in behalf of medical education in materially advancing the progress of the University Medical College are greatly appreciated; and as the founder and patron of its obstetrical clinic he has permanently contributed to its usefulness and earned the lasting gratitude of not only our Association and the medical profession, but of the community at large.

Resolved, That we fervently sympathize with the grief-stricken family, who have lost an exemplary husband, a devoted father and a true physician.

Resolved, That the foregoing resolutions be spread on our minutes, a copy thereof be sent to the bereaved family of the deceased, and the same be published in the daily papers of our city, the local medical periodicals and the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

B. ALBERT LIEBERMAN, M.D., Chairman,
A. L. HUNT, M.D.,
B. L. SULZBACHER, M.D., Committee.

ROBERT HUBBARD, M.D., Bridgeport, Conn., July 18, aged 76 years. In 1862 he was commissioned surgeon of the Seventeenth Regiment Connecticut Volunteers. After a few months' service he was promoted to surgeon of brigade under General Howard. For meritorious conduct at the battle of Chancellorsville, Dr. Hubbard was promoted to be medical inspector—assistant medical director—on the staff of General Devens. At the battle of Gettysburg, he served as medical director in charge of the Eleventh Corps. When the Eleventh Corps was ordered to Lookout Mountain he again served as medical director under General Hooker, and in that capacity took part in the battles of Lookout Mountain, Missionary Ridge and Ringgold.

MATTHEW P. LYON, M.D., died at Camden, Wash., May 18, aged 79 years. He crossed the plains to California in 1849, and has resided in Washington since 1878.

JOHN N. BEACH, M.D., West Jefferson, Ohio, July 17.——Paschal Davis, M.D., Keokuk, Iowa, July 16.——Henry C. Hinkle, M.D., Oakland, Cal., July 13.——Tyler Hull, M.D., Dimondale, Mich., July 17, from blood poisoning.——Alfred Marshall Mayer, M.D., July 13, aged 66 years, and for the past twenty-one years professor of physics at the Stevens' Institute of Technology, Hoboken, N. J.——Selden W. Noyes, M.D., Higganum, Conn., July 12, aged 51 years.——P. L. Garvey, M.D., Oakland, Ill., July 11.——Prof. D. Hofer, Munich.——A. Nocquart, Brussels, professor of path. anat., from infection at a necropsy.——Schützenberger, professor of chemistry at the Collège de France.——Legros, professor of phys. at Brussels.——G. Fissore, professor of med. path., Turin.——T. de Carvalho, professor emeritus of surgery, Lisbon.——Cernea, professor of int. path. at Jassy.

MISCELLANY.

Personal.—Dr. Frederick Holme Wiggin has been appointed a delegate from the New York State Medical Association to the British Medical Association meeting at Montreal.

Dr. W. W. Potter has been reappointed health officer of Spokane, Washington.

A Medical Lending Library has been recently opened in connection with M. Boas' medical book store in Berlin, which circulates valuable antiques as well as the most modern works.

A Museum of Hygienic and Sanitary Appliances, with a library of appropriate literature and a hall for addresses on this subject, has just been opened in Moscow.

The Professional Fifty-year Jubilees of V. Koelliker and Professor Lefebvre have just been celebrated with affectionate zeal by their friends at Würzburg and Louvain, respectively. The former is 80.

Women to be Admitted.—It is understood that hereafter women will be admitted as students into the medical classes of the College of Physicians and Surgeons of Chicago.

Extirpation of Struma in Hypnosis.—The operation lasted forty-five minutes; no pain was felt and the patient recovered in nine days. She was a woman of 38, especially susceptible to hypnotic suggestion, which had previously relieved her of neuro-rheumatic pains several times.—*Cbl. f. Chir.*, June 26.

Chain Instead of Weights for Precision Scales.—The inconveniences of the tiny weights required for delicate scales have been obviated by the substitution of a chain fastened to the beam, graduated, and moved by a lever from outside the case. The chain is arranged so that weights can be used as usual when desired. Serrin, in *Nouveaux Remèdes*, June 24.

Monument Erected to Duchenne of Boulogne.—A portrait medallion of the great neuro-pathologist was uncovered with appropriate ceremonies recently in Paris, inserted in the wall of the pavilion that bears his name in the Hospital de la Salpetrière. The bas relief below represents Duchenne applying the electrodes of an inductive machine on a patient, with the inscription: "Duchenne de Boulogne, 1806-1875, Electrisation localisée. Physiologie des mouvements. Neuropathologie."

Excision of an Extensive Lupus with Skin Grafting.—Matagne describes in the *Gaz. Méd. de Liége*, June 17, his operation to relieve a girl of 16 of a lupus, 12 by 9 centimeters on the arm, which had developed fourteen years before, after vaccination with vaccine from another person. He tested the patient with tuberculin before attempting to operate, and completed the excision with transplantation of skin from the thigh. Five years have passed since without a relapse and the patient seems absolutely cured.

Production of Light by Living Creatures.—Dubois confirms authoritatively his recent announcement that the light produced by the pholas dactylus is caused by the combination of an enzyme insoluble in alcohol, soluble in water and destroyed by heat (luciferase), with a substance soluble in alcohol (luciferin). Both of these substances are found associated in the walls of the respiratory passages of the pholas, and can be extracted from the tissues by alcohol and water in turn. By combining the alcohol solution of luciferin and the aqueous solution of luciferase with plenty of oxygen the light is produced.—*Cbl. f. Phys.*, May 1.

Three Laparotomies on One Patient for Sarcoma of the Adnexa.—Five years after a septic adnexitis consecutive to a criminal abortion, a malignant sarcoma developed in a pyosalpinx; extirpation. One year later the sarcoma grew again in the adnexa and abdominal wound; extirpation, with slight injury to the intestine. Again the sarcoma developed in the intestinal wound, but extirpation this time was soon followed by the death of the patient. The necropsy showed fatty degeneration of the internal organs. There had been nc metastasis of the malignant growth, which had been thus successfully fought for nine years.—*Cbl. f. Chir.*, June 26, from *Liecknicki viestnik*, No. 3, 1896.

National Charities Conference at Toronto, Canada, held early in July, was a symposium of excellent ideas, despite certain bureaucratic tendencies. Necessarily morals rather than sanitation or dispensary abuses claimed most of the attention of the readers and speakers. The veteran received a large share of attention during a morning session, and "Homes" were discussed in their practical phases and limitations. "Practical Charity and Jewish Methods" was the suggestive title of one paper, and the "Value of Investigation and Dangers Incident to it" was that of another. Children were well cared for,

as may be gathered from the subjects of the essays, an example being afforded by the address of William P. Letchworth of the State Board of Charities, New York, which was entitled "Dependent Children and Family Homes." We trust above all that pride of opinion did not mar the amenities of debate, and that clamor did not interfere with the enjoyments of reform.

"About Children" is announced by the *Medical Gazette* Publishing Company. The author is Dr. Samuel W. Kelley, Professor of Diseases of Children in the Cleveland College of Physicians and Surgeons, the editor of the *Gazette*. Advance orders will be filled in September.

The Mission Hospital at Sitka, Alaska, is doing splendid work. The building contains ten rooms and two large wards. It is in charge of a resident physician who lives in a cottage on the grounds. The matron and head nurse is a graduate of the Buffalo Hospital Training School. She has four native girls in the training school. The hospital was built for the care and the treatment of the children of the mission, but natives and even whites are admitted in emergency cases. During last year nearly 200 were treated in hospital and 1,160 were given dispensary relief; 93 surgical operations were performed.

The Birth Rates of France and America.—The lay press seems to be in the throes of a hot canvass over the relative morality of France and America, so far as suppression of their relative population is concerned. The *Chicago Inter-Ocean* furnishes the following summary: "While in France the birth rate is 22 per 1,000, in Nevada it is 16.30 per 1,000; in Maine, 17.99 per 1,000; New Hampshire, 18.4 per 1,000; Vermont, 18.5; California, 19.4; Connecticut, 21.3; Massachusetts, 21.5; Rhode Island has 22.5 per 1,000, a little more than France; Wyoming has 21.8 per 1,000, and Oregon 22.5. If it were not for immigration, the population would be gradually falling off, and according to statistics the inhabitants of New England and the Pacific coast will be replaced by another race within a period varying from sixteen to 200 years."

Koch's New Tuberculin.—Nencki, Maczewski and Logucki (*Presse médicale*, No. 46) publish some critical remarks on the new preparation of Koch, which merit the attention of the profession. Nencki observed while trying the new tuberculin on a patient, after every injection a considerable reaction with general indisposition, chills, fever, etc. Examining the tuberculin which he used for the injections he found it containing numerous pneumococci, staphylococci and streptococci. Two other bottles which he opened with every aseptic precaution contained the same bacteria. Inoculated on sterile nutrient media they grew very well. It seemed very probable that during the manufacture of the product, as published by Koch, a contamination could easily occur. In spite of this Koch does not believe that an improvement of his method can be thought of. It is evident that such contaminations can lead to considerable danger for the patient, and it will be necessary that the manufacturers furnish sufficient guarantees for absolute purity of their products by a severe and reliable control, before they can be generally tried as to their efficacy.

Population of Russia.—The St. Petersburg correspondent of the *New York Times* under date of June 10 writes: "The published reports of the Russian census, taken last January, are interesting from many points of view. According to the results now known, the population of the whole Russian Empire is a little less than 130,000,000. This is without counting certain provinces of Caucasia and Turkestan and the inhabitants of Northern Siberia, the exact figures of which have not yet reached St. Petersburg. St. Petersburg has 1,267,000 inhabitants; Moscow a little less than a million without the suburbs. The most interesting figures of the census are those concerning Warsaw and Odessa. The Polish capital, which in the days of Polish independence had less than 50,000 people, now has a population of 615,000 souls. Odessa's rapid growth is even more remarkable, for a century ago it was nothing but a poor fishing village, and it now has over 400,000 inhabitants. The towns of Riga, Lodz, Tiflis and Astrakhan have likewise increased in a remarkable manner.

Tricks on the Charitable.—The New York State Board of Charities in reporting on the modes of placing out dependent children, states substantially that "the worst of these is by an individual claiming to represent the 'National Children's Home Society' of Chicago, under a charter granted by Illinois to the 'American Educational Aid Association.' Some three years since he applied for an incorporation of a branch of the society, which was refused. In spite of the failure to obtain approval, he has continued to solicit funds and place out children. He has been responsible, apparently, to no supervising authority for the funds which he has secured from the benevolent. As high as 40 per cent. of the subscriptions raised by this soliciting agent was by agreement retained by him."

Higher Medical Education.—The *Alchemist and Neurologist* (April, 1897) waxes wroth over "State medical detectors called examining boards" and refers to "a new proposition to examine the professors." The *reductio ad absurdum* is rather pertinently put by the question, "but if the faculties are to be examined by a board of examiners who will examine the examiners and attest their qualifications?" We agree in spirit with the paragraph that "defamation of American medical colleges by little mediocrities in medicine has about reached the limit of toleration by the friends of medical education in the profession." To this we may add the truism that critics are seldom originating geniuses.

More Rigor in Medical Examinations.—The Massachusetts medical practice act has been made more rigorous in operation by the decision of the State Board of Registration in Medicine to increase the requirements at examination. Formerly the graduates of medical schools were asked only two questions under each of five topics and the non-graduates five. Now all are required to be examined on ten, and they must average 70 per cent. on the total in order to pass. In recent examinations about 25 per cent. of the applicants have been rejected, and the proportion may be increased by the added restrictions. There will be no dearth, however, in the supply of doctors. At an examination this week the candidates numbered 225, and 24 of them were women. Under the operation of the law there has been, it is said, a distinct elevation of the practical ability and moral quality of the medical profession. It has resulted, also, in a marked improvement in some of the medical schools, which have stiffened their requirements.

Chronic Abscess of the Brain, with Rupture into the Frontal Sinus.—Zamazal (*Wien. medizinische Presse*, June 26, 1897, p. 1190) has reported the case of a man, who complained of pain in the left frontal region, with intermissions and exacerbations. The left upper eyelid was the seat of a large cicatrix, resulting from a blow received eight years previously. The patient was lost to observation for nearly two years, when he returned on account of copious epistaxis. Other than the existence of albuminuria and enlargement of the left ventricle, with a slight peculiarity in speech and signs of mild mental perturbation, no abnormality was noted. Despite measures directed to the control of the epistaxis the bleeding was repeated, the symptoms grew gradually more pronounced, coma set in after the discharge of a considerable quantity of blood and pus from the nose, and death followed. Though no reference to post-mortem examination is made, the opinion is expressed that in consequence of the traumatism an abscess developed in the left cerebral hemisphere, rupturing after a long period of latency into the frontal sinus.

A Fifty-four Year Medical Course.—A medical student has just graduated in Warsaw, 75 years old. He commenced his course in 1843, but was forced to suspend it for lack of funds, and became a teacher for twenty years before he was able to return and resume it. He then partially completed the course when he became involved in the political uprising in Poland in 1863, and was sent to Siberia, where he worked in the mines for thirty-two years, when he was pardoned and returned to Warsaw to graduate at last.

The Old Pharmacopeia to be Used.—The supreme court of Ohio holds, in the case of State v. Emery, Dec. 1, 1896, that the reference, in Section 3 of the pure drug statute (87 Ohio Laws, 248), to the United States Pharmacopeia, is to the edition in general use when the statute was enacted, which was that of 1880. The sale of a drug, which was equal to the standard of strength, quality and purity laid down in that edition, it continues, is not rendered unlawful because it is below a higher standard laid down in a subsequently revised edition, though that edition was in general use when the sale was made. And a copy of the subsequent revised edition is not competent evidence on the trial of a prosecution under the statue. The reason given for this decision is that it is not to be supposed that the legislature intended to adopt, by reference, as part of the penal laws of the State, an edition not then in existence, and of which the legislature could then have no knowledge, and that to hold otherwise would be equivalent to holding that the revisers of the book could create and define the offense—a power which belongs to the legislative body, and can not be delegated.

Cyclotherapeutics.—M. Siegfried (Berlin, Nauhaim) has derived great benefit in certain cases from specially constructed tricycles with adjustable seats, pedals and cushions and made comfortable, and ordered as the therapeutic measure under the strict supervision of the physician, never allowing it as a sport to be indulged in at will. He describes in the *D. Med. Woch.* of July 1 the remarkable results attained in a few specimen cases of heart and spinal troubles, gout and relapsing polyarthritis, rheumatics with ankylosis of the joints and atrophy of the muscles. Patients confined for years to invalid chairs are restored to life and activity, attend to their business and take a daily tricycle ride alone. The cyclotherapeutic treatment is often extremely painful at first and is commenced very gradually, with baths, etc., with frequent intermissions. The special tricycles for this purpose are manufactured by the Adler bicycle works of Frankfurt-a.-Main.

Seal Upon Physician's Lips no Shield for Unlawful Acts.—In the case of Hauk v. State, where the supreme court of Indiana affirmed a conviction of producing an abortion, the court holds, Feb. 16, 1897, that the rule declared by the statute, which forbids a physician to reveal in evidence matters discovered by him in the course of professional attendance or treatment of a patient, is intended to protect the latter and not to shield one who is charged with perpetrating an unlawful act upon the patient. The statute, it insists, can not be so construed as to permit a party charged with crime to invoke it as a weapon of defense in his own favor instead of its being used as a protection to his victim. This interpretation, in its opinion, accords with reason and is supported by authority. On these grounds the court holds that it was not error to permit the physician who attended the patient in question, at the request of the defendant, at the time of her alleged miscarriage, to give evidence of what he discovered upon an examination of his patient during his attendance, and also the fact that the miscarriage occurred while he was present as her physician. The fact that her death may have resulted from the improper treatment of her physician or otherwise, it further holds, would not operate to defeat the conviction, under the statute, of the one who produecd her miscarriage by an unlawful antecedent act.

Gleanings.—Extractum secale cornutum found a specific for diabetes insipidus in two cases by M. Benedikt. Dose: 3 grams in fifteen doses for five days. . . . Case of chronic diphtheria complicating erysipelas, resisting serum treatment, in observation four months (Jessen). . . . Perforating peritonitis from gastric ulcer, treated by absolute deprival of food and drink by mouth or rectum; large doses of opium and two to three injections a day of salt solution, 300 to 500 c.c., which prevented thirst and kept the circulation normal. Complete recovery (Lenhartz), *D. Med. Woch.*, July 1. . . . Pulmonary lithiasis in girl of 19, twenty calculi, largest weighed 2 centigrams. *J. de M. de Paris*, June 27. . . . Felix Semon, the German laryngologist in London, created a baronet during the Jubilee. . . . To supply air to cultures of the Koch bacillus to promote growth, Lucatello starts the colony on a strip of gauze suspended in a 2 liter jar, with the lower end touching the glycerined bouillon. . . . Experiments with ovarian juice in twenty-five cases showed no effect except upon the nervous system, which was excited, especially the sexual sphere. *Gaz. degli Osp. e delle Clin.*, June 20. . . . Virulent pathogenic germs of anthrax found in the feces of immunized animals. *Gaz. degli Osp. e delle Clin.*, June 17. . . . Success of the permanent sound and deambulation in troubles caused by hypertrophied prostate (Bazy). As efficient as surgical intervention. . . . New sign of tricuspid insufficiency, a pulsation in the second intercostal space, near the left edge of the sternum. *Presse Méd.*, June 12. . . . Violent fever, hypertrophied spleen, etc., lasting a week, with albuminuria, caused by a twenty-nine hour bicycle ride. Another case had a four week typhic fever after riding 45 kilometers, with phlebitis, myositis and myocarditis. Both typical auto-intoxication from over-exertion. *Presse Méd.*, June 12.

Study of the American Medicinal Flora.—The Sub-commission of the Pan-American Medical Congress appointed to study the medicinal plants of the United States has entered into an association with the Smithsonian Institution for that purpose. The attention of our readers is called to the respective circulars issued by these organizations as follows:

"The Smithsonian Institution has undertaken to bring together all possible material bearing on the medicinal uses of plants in the United States. Arrangements have been made with a body representing the Pan-American Medical Congress, the Sub-commission on Medicinal Flora of the United States, to elaborate a report on this subject, and the material when received will be turned over to them for investigation. The accompanying detailed instructions relative to specimens and notes have been prepared by the Sub-commission. All packages and correspondence should be addressed to the Smithsonian Institution, Washington, D. C., and marked on the outside '*Medicinal Plants for the U. S. National Museum.*' Franks which will carry specimens, when of suitable size, together with descriptions and notes, free of postage through the mails, will be forwarded upon application. Should an object be too large for transmission by mail the sender is requested, before shipping it, to notify the Institution, in order that a proper authorization for its shipment may be made out.

[Signed] S. P. LANGLEY, Secretary."

Instructions Relative to Medicinal Plants.—The Pan-American Medical Congress, at its meeting held in the City of Mexico in November 1896, took steps to institute a systematic study of the American medicinal flora, through the medium of a general commission and of special Sub-commissions, the latter to be organized in the several countries. The Sub-commission for the United States has been formed and consists of Dr. Valery Havard, U. S. A., Chairman; Mr. Frederick V. Coville, Botanist of the U. S. Department of Agriculture; Dr. C. F. Millspaugh, Curator of the Botanical Department of the Field Columbian Museum, Chicago; Dr. Charles Mohr, State Botanist of Alabama; Dr. W. P. Wilson, Director of the Philadelphia Commercial Museums; and Prof. H. H. Rusby of the New York College of Pharmacy. This Sub-commission solicits information concerning the medicinal plants of the United States from every one in a position to accord it. The principal points of study are as follows:

1. Local names.
2. Local uses, together with historical facts.
3. Geographical distribution and degree of abundance in the wild state.
4. Is the plant collected for market, and if so, *a*. At what season of the year? *b*. To how great an extent? *c*. How prepared for market? *d*. What is the effect of such collection upon

the wild supply? *e*. What price does it bring? *f*. Is the industry profitable?.

5. Is the plant, or has it ever been, cultivated and if so give all information on the subject, particularly as to whether such supplies are of superior quality, and whether the industry has proved profitable.

6. If not cultivated, present facts concerning the life history of the plant which might aid in determining methods of cultivation.

7. Is the drug subjected to substitution or adulteration, and if so, give information as to the plants used for this purpose.

While it is not expected that many persons will be able to contribute information on all these points concerning any plant, it is hoped that a large number of persons will be willing to communicate such partial knowledge as they possess. It is not the important or standard drugs alone concerning which information is sought. The Sub-commission desires to compile a complete list of the plants which have been used medicinally, however trivial such use may be. It also desires to collect all obtainable information, historical, scientific and economic, concerning our native and naturalized plants of this class, and, to that end, invites the coöperation of all persons interested. Poisonous plants of all kinds come within the scope of our inquiry, whether producing dangerous symptoms in man, or simply skin inflammation, or, as "loco-weeds," deleterious to horses, cattle and sheep. In this respect, the general reputation of a plant is not so much desired as the particulars of cases of poisoning actually seen, or heard from reliable observers. It is believed that much interesting knowledge can be obtained from Indians, Mexicans and half-breeds, and that, consequently, Indian agencies and reservations are particularly favorable fields for our investigation. Such knowledge will be most acceptible when based upon known facts or experiments.

In order to assist in the study of the habits, properties and uses of medicinal plants, the Sub-commission undertakes to furnish the name of any plant-specimen received, together with any desired information available. Owing to the diversity in the common names of many plants it will be necessary for reports, when not furnished by botanists or others qualified to state the botanic names with certainty, to accompany the same with some specimen of the plant sufficient for its identification. While the Sub-commission will endeavor to determine the plant from any portion of it which may be sent, it should be appreciated that the labor of identification is very greatly decreased, and its usefulness increased, by the possession of complete material, that is, leaf, flower and fruit, and in the case of small plants, the underground portion also. It is best to dry such specimens thoroughly, in a flat condition under pressure, before mailing. While any convenient means for accomplishing this result may be employed, the following procedure is recommended: Select a flowering or fruiting branch, as the case may be, which when pressed shall not exceed sixteen inches in length by ten inches in width. If the plant be a herb two or three feet high, it may be doubled to bring it within these measurements. If it possess root leaves, some of these should be included. Lay the specimen flat in a fold of newspaper and place this in a pile of newspapers, carpet felting, or some other form of paper which readily absorbs moisture, and place the pile in a dry place under a pressure of about twenty to thirty pounds, sufficient to keep the leaves from wrinkling as they dry. If a number of specimens are pressed at the same time, each is to be separated from the others by three or four folded newspapers or an equivalent in other kinds of paper. In twelve to twenty-four hours these papers will be found saturated with the absorbed moisture and the fold containing the specimen should be transferred to dry ones. This change should be repeated for from two to five days according to the state of the weather, the place where the drying is done, the fleshiness of the specimens, etc. The best way to secure the required pressure is by means of a pair of strong straps, though weights will do. The best place for drying is beside a hot kitchen range. When dry the specimens should be mailed between cardboards or some other light but stiff materials which will not bend in transit. It is a most important matter that the name and address of the sender should be attached to the package and that the specimens, if more than one, should be numbered, the sender retaining also specimens bearing the same number, to facilitate any correspondence which may follow. The Sub-commission requests that, so far as practicable, all plants sent be represented by at least four specimens.

[Signed] H. H. Rusby, M.D.,
Chairman of the General Commission, New York Coll. of Phar.
Valery Havard, M.D.,
Chairman of the Sub-commission, Fort Slocum, David's Island, New York.

Washington.

Washington Asylum Hospital.—The Commissioners have appointed Dr. D. Percey Hickling visiting physician to the Washington Asylum Hospital.

Coroner Appointed.—The Commissioners have appointed Dr. William P. Carr the coroner for the District of Columbia, vice Dr. Charles M. Hammett resigned.

A Death from Hydrophobia.—Health Officer Woodward, Deputy Coroner Glazebrook, Drs. Thompson, Barker and Winter have made a postmortem examination of the case of the young man who died during the present week of supposed hydrophobia, from a dog bite, and will have a bacteriologic test made by Professor Norgaard of the United States Agricultural Department. This is the first time the human body has been so examined in the District.

A New Quiz Class.—Dr. F. S. Nash, late U. S. N. has started a quiz class to prepare physicians for entering the medical department of the Army and Navy and Marine-Hospital Service.

Hospital Babies May Cry.—The crying of infants in the Washington Hospital for Foundlings has been the cause of considerable complaint by residents in that vicinity and resulted in a charge of "nuisance" being preferred to the courts and investigated by the grand jury. The grand jury refused to indite the Hospital as a nuisance or gag the babies, and makes the following report: "Complaint having been made in due form of the Washington Hospital for Foundlings as a nuisance, we, the grand jurors, after careful inspection and investigation, hereby submit the following report: We personally visited the Washington Hospital for Foundlings, and found the same to be in excellent sanitary condition and a well-conducted institution. While there is some annoyance from the crying of babies during the warm season, as has been testified to by reputable citizens, we know of no remedy to stop it, and do not think the grievance of those complaining sufficient to justify us in declaring this humane and useful institution a nuisance. We recommend, however, that the authorities be requested and, if possible, required to double their present force of nurses for night duty, as the present force is inadequate to properly care for the children. We further recommend that if it be possible to do so, the children be removed to the country during the heated term. Should a suitable place be obtained for these helpless infants during the warm months it would be of great benefit to the children, besides removing the existing cause of complaint of the residents, as they allege no annoyance at other seasons."

Annual Report of the Health Officer.—The annual report of Health Officer Woodward has been transmitted to the Commissioners of the District and is now printed as a public document. There occurred during the year 5,737 deaths. Of these 3,216 were white and 2,521 were colored. The general death rate was 20.71 per thousand. This is the lowest point reached for the past twenty-two years. A satisfactory feature of the year's mortality table is the very considerable diminution in the deaths from "zymotic diseases." The entire number of such deaths recorded was 891, while during the preceding year it was 1,054. In certain diseases of this class the death list shows an increase. Thus the number of fatal cases of diphtheria rose from 75 to 110; of whooping-cough, from 22 to 65, and of grip from 53 to 118. The decrease in the total number of deaths of this class is accounted for by the diminution in the number of fatal cases of measles from 70 to 3; of scarlet fever from 13 to 1; of croup (so called), from 9 to 6; of typhoid fever, from 228 to 147; of malarial fever (so-called), from 84 to 57, and of diarrheal diseases, from 468 to 358. The number of deaths from diphtheria has not during any previous year fallen so low since 1889. The actual number of cases of this disease which were reported was 618. There is no previous record of any year with but a single death from scarlet fever. He says while it is not entirely safe to base conclusions upon this improvement in the death rate for a single year, yet its coincidence with the closing of a very considerable number of surface wells; with the replacement of more than a thousand box-privies by water-closets, and the proper drainage of the premises; and with a closer supervision of the milk supply

is very suggestive of some relation of cause and effect, and possibly justifies us in expecting still further improvement in the future. The present fall in the typhoid fever death rate is especially satisfactory, as it had continually increased since 1887. The death rate from this disease for the past year (.53 per thousand) is the lowest since 1884, and is considerably lower than that for the past twenty-two years (.64). The number of deaths from tuberculosis was 858, while during the preceding year there were 977. The number of deaths from suicide was 57, an increase of 9 over the corresponding figures for the preceding year, and an increase of 6, or almost 15 per cent. over the highest number previously recorded. The average number of suicides per annum during the past twenty-two years has been 17.2. The number of births reported was 4,573, which is probably at least one-third less than the number which actually occurred, owing to the carelessness of the physicians in making the returns.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from July 17 to 23, 1897.

First Lieut. Henry R. Stiles, Asst. Surgeon, so much of the order as directs him to report for duty, is amended so as to direct him to report for duty at Ft. Preble, Maine, relieving Capt. Henry S. T. Harris, Asst. Surgeon.

Capt. Robert R. Ball, Asst. Surgeon (Ft. Adams, R. I.), extension of leave of absence granted is extended until Oct. 15, 1897.

Capt. Marlborough C. Wyeth, Asst. Surgeon, upon the arrival of Lieut. Lewis at Ft. McPherson, Ga., will take station at Baltimore, Md., and assume the duties of attending surgeon and examiner of recruits, relieving Capt. W. Fitzhugh Carter, Asst. Surgeon. Capt. Carter will report Oct. 4, 1897, for examination as to his fitness for promotion, and on completion thereof ordered to Ft. Assiniboine, Mont., relieving Capt. George E. Bushnell, Asst. Surgeon. Capt. Bushnell, upon being thus relieved, ordered to take station at Boston, Mass., and assume duties of attending surgeon and examiner of recruits.

Capt. George McCreery, Asst. Surgeon, is relieved from duty as attending surgeon and examiner of recruits at Boston, Mass., and ordered to report at the Soldiers Home near Washington, D. C., for temporary duty, relieving Capt. Charles M. Gandy, Asst. Surgeon.

Capt. Walter D. McCaw, Asst. Surgeon, upon the arrival of Capt. Wells at Ft. Ringgold, Texas, is relieved from duty at that post, and ordered to Ft. Thomas, Ky., for duty.

First Lieut. Benjamin Brooke, Asst. Surgeon, is relieved from duty at Ft. Thomas, Ky., and ordered to Army and Navy General Hospital, Hot Springs, Ark., for temporary duty at that hospital.

Capt. Frank R. Keefer, Asst. Surgeon, is relieved from duty at Washington Bks., D. C., to take effect upon the expiration of his present leave of absence, and ordered to Ft. Sam Houston, Texas, for duty.

First Lieut. Alexander N. Stark, Asst. Surgeon, upon the arrival of Capt. Keefer at Ft. Sam Houston, is relieved from duty at that post, and ordered to Washington Bks., D. C., for duty.

Capt. Charles M. Gandy, Asst. Surgeon, upon the arrival of Lieut. Stark at Washington Bks., is relieved from duty at that post, and ordered to Ft. Mason, Cal., relieving Capt. George M. Wells, Asst. Surgeon. Capt. Wells, on being thus relieved, ordered to Ft. Ringgold, Texas, for duty.

Capt. Henry S. T. Harris, Asst. Surgeon, on being relieved at Ft. Preble, is ordered to Ft. Washakie, Wyo., relieving Capt. Joseph T. Clarke, Asst. Surgeon. Capt. Clarke, on being thus relieved, is ordered to Columbus Bks., Ohio.

So much of paragraph 16, S. O. 162, A. G. O., July 16, 1897, as relates to the officers hereinafter named is amended to read as follows:

Capt. Frank R. Keefer, Asst. Surgeon, is relieved from duty at Washington Bks., D., C., to take effect upon expiration of his present leave, and ordered to Ft. Walla Walla, Washington, for duty.

Capt. William D. Crosby, Asst. Surgeon, upon being relieved from duty at Ft. Missoula, Mont., is ordered to Ft. Sam Houston, Texas, for duty.

First Lieut. Alexander H. Stark, Asst. Surgeon, upon arrival of Capt. Crosby at Ft. Sam Houston, Texas, is ordered to Washington Bks., D.C., for duty.

Capt. Henry S. T. Harris, Asst. Surgeon, upon being relieved from duty at Ft. Preble, Maine, by First Lieut Henry R. Stiles, Asst. Surgeon, is ordered to Ft. Washakie, Wyo., for duty, relieving Capt. Joseph T. Clarke, Asst. Surgeon.

Major William C. Shannon, Surgeon (Jackson Bks., La.), leave of absence granted on surgeon's certificate of disability is extended three months on surgeon's certificate of disability.

Major Paul R. Brown, Surgeon (Ft. Hamilton, N. Y.), ordered to report to Col. Charles C. Byrne, Asst. Surgeon-General, president of the Army retiring board, appointed to meet at Ft. Columbus, N. Y., for examination by the board.

First Lieut. William E. Richards, Asst. Surgeon, is relieved from duty at Ft. Grant, Ariz., and ordered to report Sept. 20, 1897, for duty at Ft. Apache, Ariz.

First Lieut. William F. Lewis, Asst. Surgeon, upon the arrival of Lieut. Richards at Ft. Apache, Ariz., is ordered to Ft. McPherson, Ga., for duty.

Capt. William H. Arthur, Asst. Surgeon, will be relieved from duty at Ft. Myer, Va., on Oct. 1, 1897, and ordered to Philadelphia, Pa., and assume duties of attending surgeon and examiner of recruits, relieving Capt. Rudolph G. Ebert, Asst. Surgeon. Capt. Ebert, upon being thus relieved, ordered to report Oct. 4, 1897, for examination for promotion, and upon completion thereof ordered to take station at Ft. Missoula, Mont., relieving Capt. William D. Crosby, Asst. Surgeon. Capt. Crosby, on being thus relieved, is ordered to Ft. Preble, Maine, relieving Capt. Henry S. T. Harris, Asst. Surgeon.

Capt. Charles M. Gandy, Asst. Surgeon, is granted leave of absence for two months and ten days, to take effect upon being relieved from temporary duty at the Soldiers' Home near Washington, D. C., and will, upon the expiration of leave of absence, report for duty at Ft. Mason, Cal.

PAMPHLETS RECEIVED.

Baltimore Medical College Annual Catalogue.

Biographical Sketch of Dr. J. S. Whitmire. Reprinted from "Physicians and Surgeons of America."

Blepharoplasty. By Chas. H. Beard, M.D. Paper, 16 pages. Illustrated. Reprinted from American Journal of Ophthalmology, June, 1897.

College of Physicians and Surgeons, Baltimore, Md. Announcement for 1897-98.

Complete Blindness from Bilateral Pressure on the Optic Radiation, Probably Due to Hemorrhage. By W. W. Reed, M.D. Paper, 8 pages. Reprinted from Colorado Medical Joural, April, 1897.

Georgetown University, Washington, D. C. Announcement for 1897-98.

Kansas Medical College, Topeka, Kansas. Announcement for 1897-98.

National Songs. By Abraham Coles, A.M., M.D., Ph.D., LL.D. Paper, 16 pages. Newark, N. J.

Niagara University, Medical Department. Announcement for 1897-98.

St. Louis College of Pharmacy. Announcement for 1897-98.

Squint; with Special Reference to its Surgery. By Charles H. Beard, M.D. Paper, 16 pages. Illustrated. Reprinted from Journal of the American Medical Association.

Standard of Medical Education. By J. M. Bodine, M.D. Paper, 12 pages. Reprinted from American Practitioner and News, June 26, 1897.

Treatment of Alcoholism. By J. M. French, M.D. Paper, 16 pages. Reprinted from Medical and Surgical Reporter, 1896-97.

University College of Medicine, Richmond, Va. Announcement for 1897-98.

University of Louisville, Ky. Announcement for 1897-98.

University of Michigan, Medical and Surgical Department. Announcement for 1897-98.

Trade Pamphlets.

Lacto-peptone Calendar. New York Pharmacal Assn., Yonkers, N. Y.

Notes on the Treatment of Anemia. M. J. Breitenbach Co., New York City.

Tri-Elixiria. Tri-Elixiria Remedy Co., Memphis, Tenn.

CHANGE OF ADDRESS.

Boyer, J. S., from 3765 Rhodes Ave. to 391 45th St., Chicago.

Curtis, G. L., from 30 W. 59th to 7 W. 58th St., New York, N. Y.

Caldwell, J. R., from Greenville to State Quarantine Station, Marcus Hook, Pa.

Dewey, C. R., from Mattawan to Bangor, Mich.

Felty, J. W., from Abilene, Kan. to 910 Main St., Hartford, Conn.

Fanning, George J., from Lame Deer, Mont., to Red Lake, Minn.

Hunt, J. S., from 558 W. 63d St. to 440 Englewood Ave., Chicago.

Moore, T. W., from Everett, Pa., to 1048 3d Ave., Huntington, W. Va.

McBride, J. H., from Washington, D. C., to Hartland, Wis.

Noyes, A. A., from 2109 to 1205 N. 20th Ave., Minneapolis, Minn.

Peters, J. B., from Perrysburg to Macy, Ind.

Prentiss, D. W., from Washington, D. C., to Haven, Maine.

Stevenson, A. F., from Ashland Boul. to 535 Washington Boul., Chicago.

Trumbower, M. R., from Sterling, Ill., to 3351 Bert St., Denver, Colo.

Wright, J. C., from Des Moines, Iowa, to 225 Dearborn St., Chicago.

Weld, W. H., from Council Bluffs, Iowa, to Deadwood, S. Dak.

LETTERS RECEIVED.

Alkaloidal Clinic, Chicago.

Burke, Marion, New York, N. Y.; Burroughs. R. B., Jacksonville, Fla.; Blech, Gustavus, Detroit, Mich.; Brown, Mark, Cincinnati, Ohio; Bausch & Lomb Opt. Co., Rochester, N. Y.; Brenner, F. T., Quincy, Ill.

Coomes, M. F., Louisville, Ky.; Cronyn, John, Buffalo, N. Y.; College of Medicine and Surgery, University of Minnesota, Minneapolis, Minn.; Columbus Phaeton Co., Columbus, Ohio; Campbell, D. S., Detroit, Mich.; College of Physicians and Surgeons, Boston, Mass.; Casburn, R. L., Carthage, Ill.; Crockett, R. L., Sandy Creek, N. Y.

Davis, W. E. B., Birmingham, Ala.; Doliber-Goodale & Co., Boston, Mass.

Eagleson, J. B., Seattle, Wash.; Elliott, A. R., (2) New York, N. Y.; Eichberg, Joseph (2), Cincinnati, Ohio; Enno Sander Mineral Water Co., St. Louis, Mo.; Eastman, Joseph, Indianapolis, Ind.

Fyke, E. E., Centralia, Ill.; Fairbairn, Henry A., Brooklyn, N. Y.; Fitzbutler, J. H., Louisville, Ky.; Feltwell, A. L., Altoona, Pa.

Gaston, J. McFadden, Atlanta, Ga.; German, Wm. H., Morgan Park, Ill.; Gates, H. A., Humboldt, Ill.; Guthrie, F. A., Aledo, Ill.; Getz, H. L., Marshalltown, Iowa.

Hicks-Judd Co., San Francisco, Cal.

Imperial Granum Co., New Haven, Conn.

Kelley, S. W., Cleveland, Ohio; Keech, J. S., Racine, Wis.; Kretch, E., Fremont, Neb.; Kinnear, Beverly, New York, N. Y.

Library Surgeon General's Office, Washington, D. C.; Lieberman, B. A., Kansas City, Mo.; Lerche, W., Ferryville, Wis. Lewis, J. P., Topeka, Kan.; Lord & Thomas, Chicago; Lewis, LeRoy, Auburn, N. Y.

Moulton, H. Fort Smith, Ark.; Morse, Lyman D., Advertising Agency, New York, N. Y.; Mills, James, Janesville, Wis.; McClellan, E. S., Saranac Lake, N. Y.; Macy, Fred. S., Malden, Mass.; Marsh, J. L., Liberty, Mo.; Meany, Wm. B., St. Louis, Mo.; Morehouse, G. W., Sparta, Ohio; Medical Department, University of Nashville (2), Nashville, Tenn.; McClellan, B. R., Xenia, Ohio; Medical Gazette Publishing Co., The, Cleveland, Ohio.

Newman, Henry P., Chicago.

Patterson, C. E., Grand Rapids, Mich.; Priestley, J. T., Des Moines, Iowa; Peavey, J. L., Denver, Colo.

Reber, Wendell, Philadelphia, Pa.; Roberts, John B., Philadelphia, Pa.; Rothgeb, H. D., East Lynn, Ill.; Riesman, D., Philadelphia, Pa.; Reed & Carnrick, New York, N. Y.

Stowell, Chas. H., Washington, D. C.; Starkey, Horace M., Chicago; Shultz, R. C., New York, N. Y.; Stallman & Fulton, New York, N. Y.; Sayre, R. H., New York, N. Y.; Smith, B. M., Davis, W. Va.; Smith, Kline & French Co., Philadelphia, Pa.; Stockton, Chas. G., Buffalo, N. Y.; Smith & Batchelder, New Richland, Minn.; Street, David, Baltimore, Md.; Stover, G. H., Denver, Colo.; Shepard, C. H., Brooklyn, N. Y.; Smart, E. L., New York, N. Y.; Supervising Surgeon General, M. H. S., Washington, D. C.

Tuley, Henry E., Louisville, Ky.

Upshur, J. N., Richmond, Va.

Veasey, Clarence A., Philadelphia, Pa.

Welch, Wm. H., Baltimore, Md.; Woodruff, L., Alton, Ohio; Western Pennsylvania Medical College, Pittsburg, Pa.; Woodcock, W. F. A., Winona, Minn.; Wyeth, John A., New York, N. Y.

Ybarra, A. M. Fernandez de, Schenectady, N. Y.